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British Museum  
Manuscript

I  
Cotacea

1850.

PL. 14. 1240

14. N. 1240

# CATALOGUE

HN 1240

OF THE SPECIMENS OF

# M A M M A L I A

IN

THE COLLECTION

OF THE

BRITISH MUSEUM.

PART I.

C E T A C E A.

(44)

LONDON:

PRINTED BY ORDER OF THE TRUSTEES.

1850.

**PRINTED BY RICHARD AND JOHN E. TAYLOR,  
RED LION COURT, FLEET STREET.**

## P R E F A C E.

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**THE** chief object in preparing the present Synopsis has been, to give at one view a complete Catalogue of all the specimens of Mammalia, and their Osteological remains, at present in the British Museum Collection, and an account of the species known to exist in other collections, but which are at present desiderata in the British Museum, so as to enable travellers, collectors, and others, to assist in completing the National Collection. For this purpose, a short description has been given of all the genera and species at present known to exist in the different museums and private collections, and at the end of each description is added an enumeration, stating the state, age, country, and other peculiarities of each specimen of the kind in the Museum Collection; or when the species is not at present in that Collection, the museum, in which it has been observed, is added after the general habitat of the species.

The different individuals of each species contained in the British Museum Collection are indicated by the letters *a*, *b*, *c*, &c. When the age of the specimen is not stated, it is to be understood that it is full-grown, or nearly so; when other-

wise, its state is marked immediately after the letter by which it is distinguished ; and if the sexes are known, it is stated to be male or female. These particulars are followed by the habitat, which is given as particularly as the materials possessed by the Museum permit. Those specimens which have been presented to the Museum have the name of the donor marked immediately after the habitat.

When there is no such indication, the specimens have been either purchased or procured in exchange ; and in this case, whenever the place or person from whence they have been received gives authenticity to the specimen, or adds anything to their history, they are noted as being from such or such a collection.

The various synonyma have been given to the different divisions of the class, and to the genera and subgenera and species, and a reference made to the works in which they have been characterized or described.

In the adoption of the names for these divisions and for the names of the genera and species, it has been thought right to use, whenever it was possible, that which was first used for the purpose. As far as regards the specific name, there is comparatively little difficulty in the application of this simple rule ; but ordinal, and especially generic names, have been used by different authors in senses so widely different, and the groups which they are intended to designate have been so variously extended and restricted, that it is no easy matter to determine, where several names have been used, which of them ought to be preferred.

As every original observer will constantly make use of characters which others may have overlooked, or not thought of so much importance as further researches have shown to belong to it, even when a generic name is used, it will of necessity be often employed in a different sense, or with a



more restricted, or very rarely a more extended meaning than its original proposer applied to it. If this was not allowed, many new names must be added to the list of genera, which is already so overburdened with synonyma.

In those cases where the two sexes of the same species, or any particular individual state or variety belonging to it, have been differently named, the names belonging exclusively to the state or individual described are placed after the reference to the specimens to which they apply.

To determine with accuracy the names and synonyma of the species, the various skeletons and other remains of Ceteaceous animals in the museums of the College of Surgeons of London and Edinburgh, of the Zoological Society, and of the different local museums, especially those of Haslar, Norwich, Bristol, Liverpool, &c., and the various continental museums of Paris, Leyden, Berlin, Vienna, and Frankfort, have been personally examined, and in many cases the specimens contained in those museums have been sent to the Museum, so that they could be actually compared with the specimens in the Museum Collection.

JOHN EDWARD GRAY.

June 1, 1850.



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N.B. The dark back ground to the skull represents the shape of the head of the animal.

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2. Catodon—Catodontidæ.
3. Delphinus—Delphinidæ.
4. Halicore—Manatidæ.

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2. Balænoptera rostrata, 32.
3. Catodon macrocephalus, 49.
4. Physeter Tursio, 56, from Sibbald.

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2. Ziphius Sowerbiensis, 71.
3. Delphinorhynchus micropterus, 73.

## PLATE IV.

## DELPHINIDÆ.

1. Beluga Kingii, 77.
2. Neomeris phocænoides, 80.
3. Phocæna communis, 81.

## PLATE V.

## DELPHINIDÆ.

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2. Globiocephalus Svineval, 87.
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## EXPLANATION OF PLATES.

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1. *Steno frontatus*, 128.
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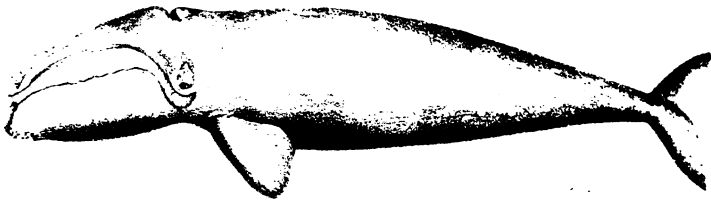
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## MANATIDÆ.

1. *Halicore Dugung*, 142.
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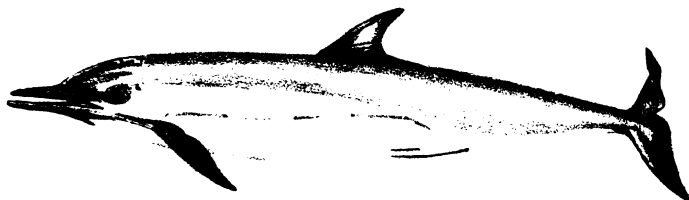
1



2



3



4



1. BALÆNA. 2. CATODON. 3. DELPHINUS  
4. HALICORE.

W. Wing, del. et lith.

From a George, Lithographes, 54, Hatten, Geissen.



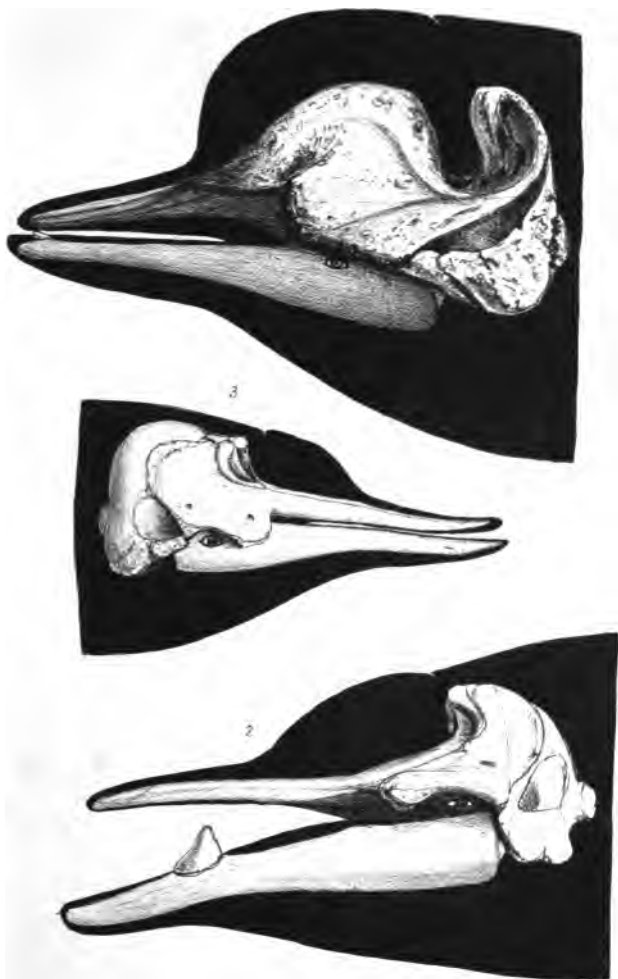


1. BALÆNA. 2. BALÆNOPTERA. 3. CATODON. 4. PHYSETER.

Ford & Cooper, 18, ... ..

W. W. ... ..



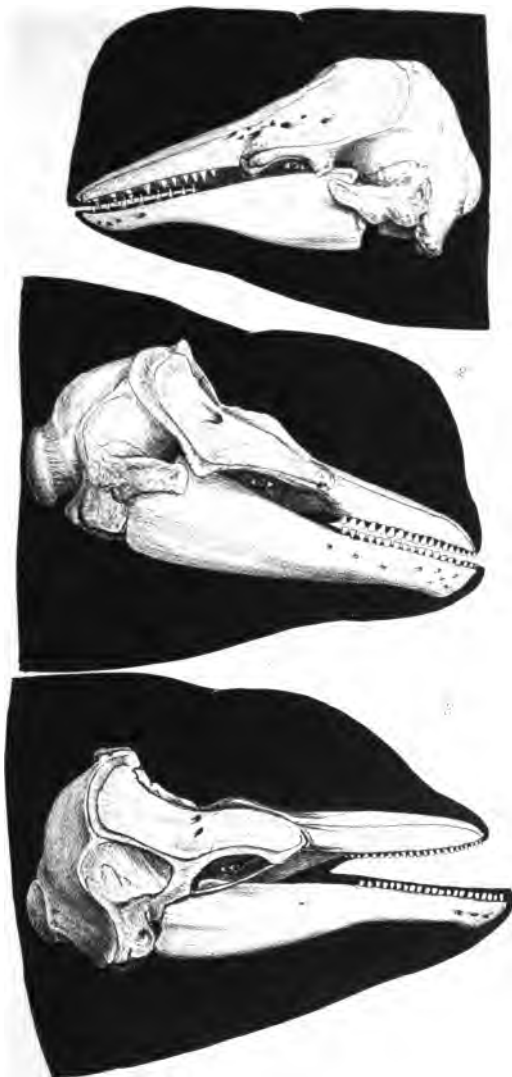


1. HYPEROODON.

2. ZYPHIUS.

3. DELPHINORHYNCHUS.





1. BELUGA. 2. NEOMERIS. 3. PHOCAENA.

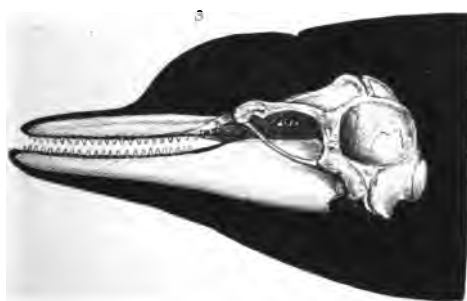






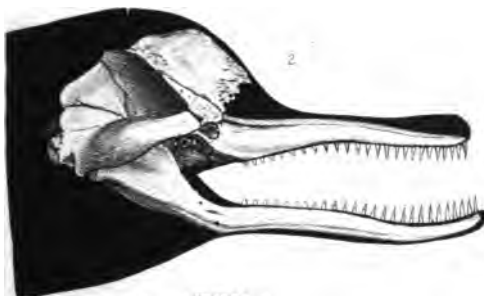
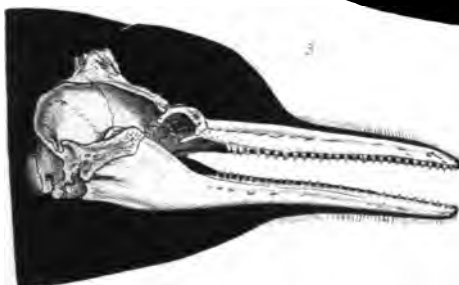
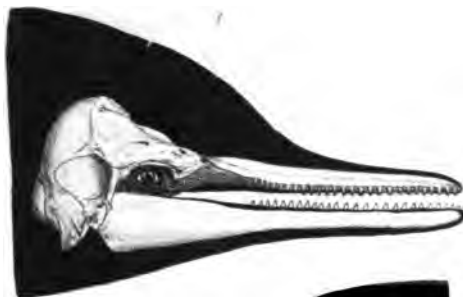
1. GRAMPUS
2. GLOBICEPHALUS
3. ORCA





1. MONODON
2. LAGENORHYNCHUS
3. DELPHINUS





1. STENOPUS
2. PLATANISTA
3. INIA
4. PONTOPORIA

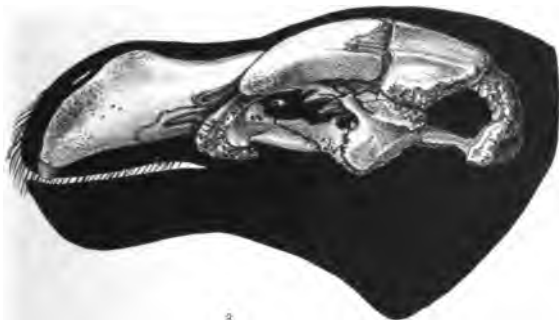
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2



3



1. HALICORE
2. RYTINA
3. MANATUS





# CATALOGUE

OF

## C E T A C E A.

---

### Order III. CETE.

Teeth all similar, conical ; sometimes not developed.

Palate often furnished with transverse plates of *baleen* or whalebone.

Body fish-shaped, nearly bald.

Limbs short, fin-shaped.

Hinder pair forming a horizontal tail.

*Mammalia*, Cete, *Linn. S. Nat.* ed. 12. i. 27 ; *Link, Beytr.* 1795 ; *Desm. N. D. H. N.* xxiv. 35, 1804 ; *Fischer, Syn.* 1828 ; *Eichwald, Zool. Spec.* iii. 337 ; *Gray, Ann. Phil.* 1825.

*Ceti*, *Wagler, Amph.* 1830.

*Les Cétacés*, *Cuvier, Tab. Elem.* 1798 ; *Cuvier, R. A.* i. 271, 1817, ed. 2. i. 281 ; *F. Cuvier*, 1829.

*Cetaceæ*, *Brisson, R. A.* 217, 1762 ; *Gray, Med. Rep.* xv. 309, 1821.

*M. à nageoires*, pars, *Desm. N. D. H. N.* xxiv. 32, 1804.

*Natantia*, *Illiger, Prod.* 139, 1811.

*M. pinnata* and *pinnipedia*, pars, *Storr. Prod. Mam.* 1780.

*Bipedes*, *Latr. Fam. Nat.* 64, 1825.

*Sirenia* and *Cete*, *Selys Longchamps*, 1842.

*Hydromastologie ou Cétologie*, *Lesson, Nov. Tab. Reg. Anim.* 197, 1842.

*Fischsucke* (Schucher), *Oken, Lehrb. Naturg.* 661, 1815.

*Cetacea* and *Amphibia*, pars, *Rafin. Anal. Nat.* 60, 1815.

Belon and Rondelet appear to have known the Dolphin (*Delphinus Delphis*), the 'Ondre' (*D. Tursio*), and the Phocæna (*P. vulgaris*) ; but their account of the Spermaceti Whale is very indistinct.

Clusius, in 1605, first described and figured the Sperm Whale

A

in a recognizable manner, from two specimens thrown on the coast of Holland in 1598 and 1601; and Johnston (t. 41 & 42) well figures one of these specimens.

In 1671, Martens, in his 'Voyage to Spitzbergen,' gave a description and figure of the Whalebone Whale, the "Fin Fish" (*Balænoptera Physalus*), the Weise Fish (*Beluga Catodon*), and of the Botzkopt (*Orca Gladiator*); and his figures of the first and second have been the chief authorities for these animals until this time.

In 1692, Sibbald published a small quarto pamphlet, with three plates, describing the Whales which had come under his observation. He divides them into three groups:—I. The small Whales with teeth in both jaws, of which he notices three:—the Orca (*O. Gladiator*), the Beluga, and one from hear-say, which from its size was probably a Porpesse (*Phocæna vulgaris*). II. The larger Whales with teeth in the lower jaw:—1. the Sperm Whale; and 2. the Black-fish. And III. The Whalebone Whales, of which he describes three specimens. The arrangement he proposed is the one used in this paper; and his work forms the groundwork of all that was known on the larger Cetacea up to the Linnæan time: but Artedi and Linnæus committed the mistake of regarding individual peculiarities resulting from accidental circumstances as specific distinctions, so that three of their species have to be reduced to synonyma. [There is a later edition, edited by Pennant, which appeared in Edinburgh in 1773.]

In 1725, Dudley, in the 'Philosophical Transactions' (No. 387), describes all the Whales now recognized by the whalers, except the Black-fish; viz. 1. The Right or Whalebone Whale. 2. The Scrag Whale. 3. The Fin-back Whale. 4. Bunch or Hump-back Whale. And 5. The Spermaceti Whale. Cuvier, in his historical account, scarcely sufficiently estimates either Sibbald's or Dudley's contribution.

Bonnaterre, and after him Lacepède, in their Catalogues, collected together with great industry all the materials they could find, in every work that came in their way; hence they, the latter especially, formed a number of species on most insufficient authority: for example, they made a genus on the otherwise good figure of the Sperm Whale figured by Anderson, because the artist had placed the spout on the hinder part of the head; and a division of a genus for the Fin-fish of Martens, because he did not notice in his description or figure the fold on the belly. Yet the characters given by Lacepède, and genera formed by him, have been used in our latest works, some even in Cuvier's last edition of the 'Animal Kingdom'; and many of these species still enumber our Catalogues.

Cuvier, dissatisfied with this state of things, in his 'Ossemens

Fossiles,' examined the various documents and consulted the authorities which had been used by Lacepède; but he appears to have undertaken the work with a predisposition to reduce the number of species, which his predecessor had described, to the smallest number. Thus, he concludes that there are only eleven species of Dolphins, one Narwhal, one Hyperoodon, one Cachalot or Sperm Whale; and he appears to think there are only two Whalebone Whales—the Right Whale and the Finner. To make this reduction: first, he believes that the Hump-backed Whale of Dudley is only a whale that has lost its fin, not recognizing that the *Cape Rorqual*, which he afterwards described from the fine skeleton now shown in the inner court of the Paris Museum, is one of this kind; secondly, that the Black-fish and the Sperm Whale are the same species; an error which must have arisen from his not having observed that Sibbald had figured the former, for he accuses Sibbald of twice describing the Sperm Whale; and when he came to Schreiber's copy of Sibbald's figure, he thinks the figure represents a Dolphin which had lost its upper teeth, overlooking the peculiar form and posterior position of the dorsal fin, and the shape of the head, which is unlike that of any known Dolphin. This mistake is important, as it vitiates the greater part of Cuvier's criticism on the writings of Sibbald, Artedi and others, on these animals. Unfortunately these views have been very generally adopted without re-examination. But, in making these remarks, it is not with the least desire to underrate the great obligation we owe to Cuvier for the papers above referred to; for it is to him that we are indebted for having placed the examination of the Whales on its right footing, and for directing our inquiries into the only safe course on these animals, which only fall in our way at distant periods, and generally under very disadvantageous circumstances for accurate examination and study.

In 1828, Mr. F. J. Knox, the Conservator of the Museum of the Old Surgeons' Hall in Edinburgh, published a Catalogue of the Anatomical preparations of the Whale, in which he gives many interesting details on the anatomy of the *Balæna maximus* and *B. minimus*, which had been stranded near Edinburgh, of the foetus of *B. mysticetus* from Greenland, and of *Delphinus Tursio* (*D. leucopleurus*), *D. Delphis* and *Phocæna communis*, *Soosoo gangeticus*, and *Halicore Indicus*; but the paper has been very generally neglected or overlooked.

M. F. Cuvier's 'Cetacea' (Paris, 1836) is little more than an expansion of his brother's essays, with a compiled account of the species; but he has consulted with greater attention the works of Sibbald and Dudley, has some doubts about the finned *Cachalots* being the same as the *Sperm Whale* (p. 475), but at length gives

up the subject. He has found out that the *Hump-backed Whale* is evidently a *Rorqual* (p. 305), but does not record it as a species, nor recognise it as the *Cape Rorqual*, nor as Dr. Johnston's Whale; the latter he incorrectly considers the same as *B. Physalus*. He combines together as one species Quoy's short-finned *Rorqual* of the Falkland Islands with Lalande's long-finned *Whale* of the Cape (p. 352). He is in great doubt about the hump of the *Cachalots* (p. 279); his remarks on that subject and on the *Cachalots* of Sibbald, show how dangerous it is for a naturalist to speculate beyond the facts before him.

Sir William Jardine's *WHALES* in the 'Naturalists' Library' is chiefly an abridgement of M. Lesson's miserable compilation, with some extracts from Knox and other English writers on the subject.

Nor are the British species better known; for in Fleming's excellent work they are left nearly in the same state they were in when Linnæus published his twelfth edition of the '*Systema Naturæ*'; and Mr. Bell's account and figures are chiefly derived from preceding authors: this revision, though not undertaken with any view to this subject, has taken three or four species from our list, and determined the specific identity of one hitherto neglected, and added two or three species for the first time to our Fauna.

I am by no means convinced that all the species in the following Synopsis are distinct. It is rather to be regarded as a collection of the accounts of the Whales of different localities, derived from the specimens and other materials at present at our command; and I have endeavoured to select from these sources what appeared to afford the best characters for defining them, so as to furnish to those naturalists who might enjoy the opportunity of observing the animals, a short abstract of what has been observed with regard to them, and of referring them to where they could find a more detailed account of each kind. I have been induced to adopt this course, as wherever I have had the opportunity of examining and comparing the proportions of the allied species of distant seas, and of comparing their bones, they have invariably proved distinct, which leads me to believe that many of the other species of different countries, which have been regarded as the same, will be found to be distinct, though representatives of those found in other seas.

#### SYNOPSIS OF FAMILIES.

Suborder I. *Skin smooth, bald. Teats 2, inguinal. Limbs clawless; fore-limbs fin-shaped; hinder united, forming a forked horizontal tail. Teats inguinal. Nostrils enlarged into blowers. Carnivorous. CETE.*

1. BALÆNIDÆ. Nostrils 2, separate, longitudinal. Palate with baleen. Jaws toothless. Head very large.
2. PHYSETERIDÆ. Nostrils 2, separate, longitudinal. Palate smooth. Lower jaw toothed. Head very large.
3. DELPHINIDÆ. Nostrils united, lunate, transverse. Palate smooth. Jaws toothed; rarely deciduous. Head moderate.

Suborder II. *Skin rather hairy; whiskers rigid. Limbs clawed. Teats 2, pectoral. Nostrils 2, apical. Herbivorous. SIRENIA.*

4. MANATIDÆ. Grinders none, or flat-crowned. Front of jaws covered with horn.

#### Suborder I. CETE.

Skin smooth, without hair. Limbs clawless; fore fin-like; hinder caudal, horizontal, forked. Teats 2, inguinal. Nostrils enlarged and close together, called blowers. Carnivorous. Teeth conical, all similar, often not developed, and absorbed. Palate often furnished with transverse, pendent, horny plates of *baleen* or whalebone; fringed on the edge.

SYN. Cete, *Gray, Ann. Phil.* 1825; *Selys Longchamps*, 1842.

Cetacea, *Dum. Z. A.* 1806.

Cetaceæ carnivoræ, *Gray, Med. Rep.* xv. 309, 1821.

(Souffleurs) Hydraula, *Latr. Fam. Nat.* 1825, 65.

Natantia Cete, *Illiger, Prod.* 141, 1811.

Cete β, *Fischer, Syn.* 1828.

M. pinnata, *Storr. Prod. Mam.* 1780.

Cetaces, *Cuv. Tab. Elem.* 1798:

#### Fam. 1. BALÆNIDÆ. WHALEBONE WHALES.

Head very large, one-third the size of the body. Jaws of young with rudimentary teeth, which are never developed; of adult toothless. Palate with crowded, transverse, triangular, pendent, horny plates (whalebone or baleen), with a fibrous inner edge, forming "a screening apparatus." Head large, shelving in front. Blowers far back, longitudinal, separate, each covered with a valve. Spout double. Gullet small. Eyes small, near angle of the mouth.

Balæna and Physeter, *Linn.; Cuv. Tab. Elem.* 1798.

Balænadæ and Physeteridæ, *Gray, Lond. Med. Rep.* xv. 310.

Les Cachalots and Les Baleines, *F. Cuv.* 1829.

Cete, *Illiger, Prod.* 141, 1811.

Cetacea edentula and C. dentata, *Brisson, R. A.* 218, 225.

Edentes abnormaux, *Blainv.* 1816.

Physeteridæ, Gray, *Ann. Phil.* 1828; *Selys Longchamps*, 1842.

Cete hydræoglossi § B, *Wagler, N. S. amp.* 33, 1830.

Cetaces, *Lesson, N. Tab. Reg. Anim.* 197, 1842.

Cetacea, *Rafin. Anal. Nat.* 60, 1815.

Ruderer Wale, *Oken, Lehrb. Nat.* 661, 1815.

Balenidia, *Rafinesq. Anal. Nat.* 61, 1815.

Balænidæ, Gray, *Ann. Phil.* 1828; *Zool. Erebus and Terror*, 15;

*Cat. Mam. B.M.*; *Selys Longchamps*, 1842.

Vermivora, *Lesson, N. Tab. Reg. Anim.* 201.

Balæna, *Lesson, N. Tab. Reg. Anim.* 201.

Bale, *Oken, Lehrb. Naturg.* 663, 1815.

The Baleen or Whalebone has generally been considered as the teeth of the whale; but this must be a mistake, for Mr. Knox observes—"In the foetal *B. Mysticetus* sixty to seventy dental pulps were found on each side of each jaw, making the whole number amount to from 260 to 300. The preparation (n. 56) exhibits a portion of this gum with twelve pulps; had these pulps been confined to the upper jaw and corresponded to the number of baleen plates, it would have formed a strong analogy between the baleen and teeth; but the number of baleen plates in the whale greatly exceeds the number of dental pulps, and the lower jaw, which contained an equal number of pulps with the upper, has neither teeth nor baleen in the adult whale. Their presence therefore in the foetal *Mysticetus* forms one of the most beautiful illustrations of the unity of organization in the animal œconomy. The teeth in the *Balæna* never cut the gum, but become gradually reabsorbed into the system; the very cavity in which the germs were lodged disappear; whilst to suit the purposes of nature, the integumentary system furnishes the baleen, which is evidently a modified form of hair and cuticle."—*Knox, Cat. Whales*, 22. Professor Eschricht has shown also that the foetus of *Megaptera Boops* (Danish Trans. 1845, xi. t. 4) has numerous teeth on the edge of the jaw, though they are never developed. I am inclined to regard the baleen as a peculiar development of hair in the palates of these animals, and somewhat analogous to the hair found in the palates of the genus *Lepus*.

From the examination I have been able to make of the baleen of *Balænoptera rostrata*, and of different masses of small blades of *Balæna australis*, it would appear as if there was, at least in those two species, two series of baleen on each side of the palate; the external series being formed of large triangular blades placed at a certain distance apart; and the internal, in *Balænoptera rostrata*, formed of smaller, much thinner, triangular pieces, placed much closer together and forming a very dense screening apparatus; and in *Balæna australis* the inner series is formed of nu-

merous separate narrow strips of whalebone, each ending in a pencil of hairs, which vary in size from that of small twine to that of tape, half an inch wide; these are placed behind the others, and gradually increase in size from the innermost to the broad external series.

The baleen or whalebone affords good characters for the separation of this family into sections.

Mr. Knox (*Cat. Prep. Whale*) gives the best account of the development, position and distinction between the baleen of the Whales of the North Sea which has come under my observation, and it agrees with the observations I had made on the subject before I could procure his pamphlet.

In *Balæna maximus*, Knox (*Physalus antiquorum*), 314 external or labial plates (*baleen*) were counted on each side; towards each extremity these plates degenerate into bristles, and admit of being counted with difficulty. Towards the mesial line the *baleen* as a mass diminishes gradually in depth, giving the whole palatine surface an elegant arched form. The 314 external or labial plates do not extend to the whole extent in a transverse direction, but a system of numerous small and narrow plates succeeds the external ones. For each external plate, twelve (internal) smaller ones could be easily counted; so that the number of plates which could be counted, and not including the bristly terminations towards the snout, pharynx, and mesial line, stand thus: external or labial plates, 314; internal small plates, corresponding to each external one, 12: total number of baleen plates, 3768. The longest plate of baleen is placed about the centre of each of the sides, and measured 26 inches in length and 15 in breadth. The substance when recent is highly elastic and very heavy; the whole weighed nearly two tons.

It is short or long according to the species of whale, being modified entirely by the more or less arched form of the upper jaw. Mr. F. Knox first pointed out this curious and important fact. The usual conclusion came to by all persons was, that the size of the whale corresponded to the length of the *bone* or *baleen*. Now this is only good with regard to one species of whale, and not at all to the whole group of Whalebone Whales.—Knox, *Cat. Prep. Whale*, 8.

In *Balæna minimus*, Knox (*Balænoptera rostrata*), 307 external or labial (*baleen*) plates can be counted on each side; towards each extremity these plates degenerate into fine bristles, which were not counted. The plates hang perfectly parallel with each other, and from their closeness and fringed lingual aspect, must act as a very perfect filter in collecting the minute molluscous animals, and at the same time enable the whale to eject the water. The food of the Whale is still a much-disputed point.

It is now generally admitted that the *Mysticetus* lives only on small Medusæ, shrimps, &c., but that the other species of *Whalebone Whale* devour inconceivable quantities of fish; for instance, *M. Desmoulins* states that "600 great cod and an immensity (probably as many thousand) of pilchards have been found in the stomach of a single *Rorqual*."

Mr. F. Knox, in dissecting the *Balæna maximus*, saw no cavity in the course of the viscera which could have contained six cod of ordinary size; that of *B. minimus* was empty, although the Firth of Forth, particularly at and above Queensferry, abounds at all seasons with herrings and other fishes and their fry. The want of teeth by no means renders it impossible that the *Balæna* with baleen can live on large fishes; but the extreme narrowness of the gullet (that of *B. maximus* barely allowed the passage of the closed human hand, and that of *B. minimus* was certainly narrower than that of an ordinary-sized cow), added to the want of teeth and the want of proper authenticated information on the subject, are strong arguments in favour of the hypothesis that they do not.—*Knox, Cat. Prep. Whale*, 16.

The thickness of the plate of baleen depends on the number of bristles. In the baleen of *Balæna maximus* there are 506 bristles in the thickness of the plate, and by a rude enumeration there appeared to be at least 130 bristles in each inch. The whole breadth of the plate being  $5\frac{1}{2}$  inches, gives us 747 bristles entering into its composition. These bristles are matted together to the extent of 11 inches on the external and 5 inches on the internal margins, by a substance like minute laminæ or scales, and which may be seen by the aid of a microscope to invest the free bristles at the fringed extremity of the plate. We have often observed the facility with which some baleen can be split up, and were struck with the fact that the baleen of *Balæna maximus* would not split. The removal of the external lamina in the plate under description shows the cause of this: about  $6\frac{1}{2}$  inches from the root of the plate, many of the bristles have deviated from their direct parallel inclination, and become intimately twisted and interwoven with each other. It has been attempted to prove the age of the Whale from an examination of the baleen, in the same manner as we judge of the age of cattle by certain annulated markings on the horns. On the plate before us we can distinctly perceive numerous transverse lines crossing the course of the bristles at right angles. If these transverse lines indicate a periodical check to the growth of the baleen, then the age of the *Balæna maximus* would be 800 to 900 years old, that being the number of transverse lines on the longest plate of baleen.—*Knox, Cat. Prep. Whale*, 9.

The whalebone of the smooth-bodied whales without any back



fins (*Balæna*) is elongate, much longer than broad at the base, and gradually attenuated, and edged with a fringe of equal, lengthened, fine, soft bristles. The baleen is internally formed of a thin layer of fibres covered on each side with a thick coat of 'enamel'; when dry and out of the mouth, the blades are flat.

The whalebone of the plaited-bellied whale with a bunch (*Megaptera*) or a dorsal fin (*Balenoptera*) is short, broad, triangular, not much longer than broad at the base, and rapidly attenuated, and is edged with a series (sometimes rather crowded) of elongate, rigid, unequal bristle-like fibres, which become much thicker and more rigid near and at the tip; the baleen is internally formed of a more or less thick layer of thick fibres, covered on each side with a thin layer of enamel, and when dry and out of the palate they are curled up and somewhat spirally twisted.

The baleen of the *Balæna* is alone designated *Whalebone* (or rather *Whale-fin*, as it is usually called) in commerce. The baleen of the other genera of this family is called *Finner-fin* or *Humpback-fin*. The wholesale dealers in baleen, in the 'London Directory,' are called *Whale-fin Merchants*, and whalebone occurs under the name of *Whale-fin* in the Price-current. In the 'London New Price-current' for 1843, the *South Sea Whale-fin* varied during that year from 200*l.* to 305*l.* per ton, and there is no price named for *Greenland Whale-fin*. See *Maccul. Com. Dict.* i. 1344.

The baleen was formerly thought to be the tail of the animal. See *Blackstone, Commen.* i. 233, quoted by *Macculloch, Commercial Dict.* 1344.

#### SYNOPSIS OF THE GENERA.

a. *Dorsal fin none. Belly smooth. Baleen elongate, slender.*

##### 1. BALÆNA.

b. *Dorsal fin distinct. Belly plaited. Baleen broad, short.*

2. MEGAPTERA. Pectoral fins elongate. Dorsal fin low.

3. BALÆNOPTERA. Pectoral fins moderate. Dorsal fin falcate,  $\frac{3}{4}$  length from nose. Vertebrae 46 or 48.

4. PHYSALUS. Pectoral fins moderate. Dorsal fin falcate,  $\frac{3}{4}$  length from nose. Vertebrae 54 or 64.

a. *Back not finned. Baleen elongate, slender, straight. Belly smooth.*

##### 1. BALÆNA. RIGHT WHALES.

Head rather blunt, swollen, with a slight beard, consisting of a few scattered white hairs on the anterior extremity of both jaws. —*Scoresby, Arct. Regions*, i. 458. The baleen or whalebone is

narrow, elongate, linear, very gradually tapering, fringed on the inner edge with numerous fine, soft, flexible fibres of a nearly uniform length, consisting internally of a thin layer formed of several series of fibres, covered on each side by a thick coat of enamel. Throat and belly smooth, not plaited. Dorsal fin none.

The seven cervical vertebræ are soldered together, and sometimes the first dorsal is equally soldered to the cervical.—*Duvernoy in Cuvier, Anat. Comp.* ed. 2. i. 195.

They live in the ocean, but come into the shallow and sheltered bays to bring forth their young.

The foetus has no appearance of whalebone on the palate, and the lips are very large, and longly depending over the sides of the under jaw.

*Balæna*, sp. *Linn.*; *Illiger, Prod.* 142, 1811.

*Balæna*, *Rafn. Anal. Nat.* 61, 1815; *Lacepède.*

*Balæna*, *Lesson, N. Tab. Reg. Anim.* 202.

*Balæna* § *a*, *Fischer, Syn. Mam.* 521.

“The length, so is the breadth (of the baleen), a mere consequence of the extreme narrowness of the palate in the *Mysticete* compared to that in the *Balæna* (*Physalus*) *maximus*.”—*Know, Cat. Whale*, 29.

Through the kindness of Messrs. Smith and Simmonds, and Mr. Smith of Messrs. W. Westall & Co., Whale-fin Merchants, I have been enabled to examine and compare numerous species of the *whalebone* or *baleen* received from different countries, and to compare their peculiarities as exhibited during its preparation.

The *fins* or *whalebones* of each series together are called a “side of bone;” the largest are in the middle, from whence they gradually diminish away to nothing at each extremity: the largest fin on the side is called the “sample blade.”

They know in the trade three distinct kinds. 1. The *Greenland*, from Greenland, Davis’ Straits, and various parts of the North Sea, which is the best. 2. The *South Sea*, or *Black fish whale-fin* brought by the South Sea Whalers. And 3. The *North-west Coast*, or *American whale-fin*, which was first imported about five years ago, and at first sold for a high price, but it has now fallen, and is considered as only a large kind of South Sea; but from the examination I have been able to make, I should believe that these three kinds are each produced by very different species of whales.

The three kinds are very different in shape. The outer edge of the *Greenland* is curved considerably; in that of the *North-west Coast* it is much more straight, and in that of the *South Sea* almost quite straight. Figs. 3, 4 and 5, in Plate I. (of the *Zoology*

of the *Erebus and Terror*) represent the three different kinds in the same position, and on the same scale, being one-fourteenth of the natural length and breadth. The fibres on the edge in the *Greenland* and *Margined Whales* are very fine, flexible and long, forming only a thin series; in the *South Sea* they are rather coarser; but in the *North-west Coast* much thicker and coarser; quite bristly, and much more so towards the apex; and they are more erect and form a thicker series, approaching in that character to the *baleen* of the *finners*.

The following are the measurements of the samples of the different kinds of "*Whale-fin*" in the British Museum:—

	<i>Greenland.</i>		<i>North-western.</i>		<i>Southern.</i>	
	in.	lin.	in.	lin.	in.	lin.
Length of blade, entire ...	144	0	112	0	90	0
Width at base .....	11	0	10	0	9	0
„ at middle .....	6	0	4	0	3	6
„ at $\frac{3}{4}$ length .....	.....		2	4	2	0
„ of hair at end .....	10	0	7	0	7	0
Thickness at base .....	4	4	4	5	0	3 $\frac{1}{2}$
„ at middle .....	4	4	0	4 $\frac{1}{2}$	0	2 $\frac{1}{4}$
„ at $\frac{3}{4}$ length ...	0	2 $\frac{1}{2}$	0	3 $\frac{1}{2}$	0	2

The *Greenland fin* has the hair on its edge generally stripped off, and is clean and bright when it is brought to England; but this may be from the care the North Sea whalers take in collecting and cleaning it (as described by *Scoresby*, *Arctic Regions*, i. 418), and the blades are brought home in bundles about 100-weight each. On the other hand, the *North-west Coast "fin"* and the *South Sea "fin"* have the hair left on the edges; they are brought home in bulk, and are always covered with an ashy-white soft laminar coat, looking like the rotted external layers of the enamel. This coat has to be scraped off with large knives before it is used or prepared, and the surface after the scraping is not so polished and resplendent as that of the *Greenland "fins."*

The whalebone is boiled for about twelve hours, to render it soft before it is divided into strips—it then divides very easily. The smaller pieces, when softened, are split by a small machine into very narrow strips like bristles, and used for bristles to make brooms, &c. &c.

For every economical purpose, the *Greenland "fins"* are preferred, and last much longer, even when divided into the false bristles; and the *Greenland fin* will alone do for the finer work, such as the strips for plaiting for bonnets, or to make ladies' riding-whips, or the covering of telescopes and other tubes; the white strips for these purposes being taken from pale longitudinal lines on the enamel of the *Greenland fins*.

The Australian baleen of *B. marginata* is nearly equally fine, and if imported might, by its natural white colour, be very useful for many economical purposes, notwithstanding its small size.

The following paragraph from the *Daily News* of the 20th of December, 1849, gives some idea of the quantity of whalebone now used:—"The receipts of whalebone in the United States since January have been 2,285,095 lbs., and the exports to date were as follows:—To North Europe, 587,926 lbs.; to France, 515,351 lbs.; to Great Britain, 378,449 lbs.; to other parts, 9296 lbs., making a total export of 1,491,022 lbs. The receipts for the last eight years were 18,912,206 lbs., and the exports 11,299,811 lbs. The quantity taken for consumption during the same period was 7,612,389 lbs. The stock in the United States at date was estimated at 903,000 lbs.: viz. in New Bedford and Fairhaven, 368,000 lbs.; New York, 275,000 lbs.; in all other places, 260,000 lbs."

These whales yield the *train oil* of commerce; but *train* appears to be applied by the whalers as we use *drain*; they refer to the *train* of the blubber, when speaking of the oil of dolphins, &c., and appear to call all blubber-oil *train*, in contradiction to head-matter, or spermaceti, which Sibbald says is called "*whale-shot*" by the English; it is so called by the Dutch whalers.

\* *Body smooth above.*

† *Baleen tough, flexible; enamel thick; internal fibres few, very slender, forming a fine, thin, flaccid fringe.*

# 1. BALÆNA MYSTICETUS. The RIGHT WHALE.

Head depressed. There are two series of tubercles on each side of the lower lip; and according to Scoresby's figure the head is  $\frac{3}{4}$ , the fins are  $\frac{3}{4}$ , the vent  $\frac{3}{4}$ , and the sexual organs  $\frac{1}{4}$  from the head.

Females larger than the males.

The nose of the skull is regularly and gradually arched above, rather wide behind, near the blow-hole; the nose and the intermaxillary bones regularly taper in front. The hinder end of the jaw-bones is obliquely produced behind, and the frontal bones are narrow, nearly linear, and oblique; temporal bone narrow, oblique.

The *baleen* is very long, varying from 9 to 12 feet, linear, tapers very gradually, and of nearly the same moderate thickness from end to end, and covered with a polished grey or greenish black enamel. The internal fibres occupy a small part of the substance, are parallel, of a fine uniform texture, and black; the enamel, which forms by far the greater part of the substance, is generally blackish; but it is sometimes, especially on

the inner side of the "fin," paler in longitudinal stripes. The fibres on the edge, like the internal fibres of which it is a continuation, are very fine and black. The "fins" or pieces of baleen are flat, or as the merchant calls them "kindly," so that they produce straight pieces fit for the better kind of parasols and umbrellas, &c., when cut into strips.

*Balæna mysticetus*, Linn. S. N. i. 105; Gmelin, S. N. i. 223; Müller, Zool. Dan. 6; Erxl. Syst. 601; O. Fab. 32; Schreb. Saugth. t. 322; Cuv. R. A. i. 285, ed. 2. i. 296; Oss. Foss. v. 361. t. 25. f. 9, 11. t. 26. f. 25; Lesson, Euv. Buffon, i. 294. t. 11; Desm. Mam. 527, 798; Desm. Dict. Class. H. N. ii. 160; Fischer, Syn. 521; Gray, Zool. Erebus and Terror, 15, 47. t. 1. f. 4, baleen; Cat. Mam. B.M. 104.

*Balæna mysticetus*, Lesson, N. Reg. Anim. 202.

The Right, or Whalebone Whale, Dudley, Phil. Trans. xxxiii. 256; Scoresby, Arctic Regions, i. 448. t. 12. f. 1.

*B. Grœnlandica*, Linn. Mus. Ad. Frid. i. 51.

*B. vulgaris*, Brisson, Reg. Anim. 347.

*Bal. vulgi*, Aldrov. Pisc. 688.

*Bal. vulgo dicta*, Rondel. P. 475. fig.

*Bal. Rondeletii*, Willoughb. Pisc. 35.

*B. Physalus*, Pallas, Zoogr. i. 289, not Syn.

*De Balænis hujusmodi Bipennibus*, Sibbald, Phal. 27.

*B. Mysticetus borealis*, Knox, Cat. Prep. Whale, 21.

*Balæna mysticetus borealis*, Knox, Cat. Anat. Prep. Whale, 21.

Var. 1. *Balæna glacialis occidentalis*, Klein, Misc. Pisc. ii. 12;

Müller, Z. Dan. Prod. 7; Bechst. Naturg. Deutsch. 1238;

Virey in Nov. Dict. Sci. iii. 183; Desm. Mamm. 527.

*B. Islandica*, Brisson, Reg. Anim. 350.

*B. Mysticetus*  $\beta$ . *Islandica*, Gmelin, S. N. i. 223; Fischer, Syn. Mam. 522.

*B. Nord Caper*, Bonnat. Cet. 3; Lacep. Cet. 103. t. 2. t. 3; Gerard, Dict. Sci. Nat. iii. 438.

Nord Kapper, Egede, Grœnl. 55.

Nordcaper, Anders. Isl. 219; Crantz, Grœnl. 145.

Var. 2. Rock-nosed Whale, Guérin in Jameson's N. Edinb. Phil. Journ. 1845, 267.

Inhab. North Sea.

a. Skull and lower jaw; North Sea.

The specimen figured in Cuv. Oss. v. t. 25. fig. 9-11.

b. c. Two plates of whalebone.

Greenland. Presented by Messrs. Smith and Simmonds.

The specimens figured in the 'Voyage of the Erebus and Terror,' p. 47. tab. 1. fig. 11.

d. One plate of whalebone; Greenland.

The Nord Caper, *Anderson*, does not appear to differ from this species. It is said to be thinner, and infested with barnacles; this would lead one to think that it was established on a specimen out of health. Lacepède's figures above cited, from a drawing by Backstrom, communicated by Sir Joseph Banks, are the best figures of the Right Whale after Scoresby's.

A variety, or probably different species, is thus noticed by M. Guérin, the surgeon of a whaler:—

The Rock-nosed Whale is said "never to leave the coast, and even to make the circuit of the bays. The most important point (of difference) is the comparative size of the head and body. The head is always considerably more than  $\frac{1}{3}$ , while in the true *B. mysticetus* it is, as stated by Scoresby, less than  $\frac{1}{3}$ , or as 16 to 51. The whalebone is longer in comparison to the length of the animal, but the laminæ are thinner for their length; the body is broader and terminates more abruptly; the skin is dark velvet-brown, and has fewer spots and yields less oil. The whalers in general seem to think that it is merely a difference of age that causes this difference in their external characters, but cubs or sucklers are as often found amongst the Rock-noses as amongst the Middle Ice Whales; the former must have attained the age of maturity."—Guérin, in *Jameson's N. Edin. Phil. Journ.* 1845, 267.

In some individuals the *baleen* is yellowish white, the fibres and enamel pale colour.

There is the stuffed skin of a foetal specimen, 29 inches long, from Dr. Knox' Collection, in the *Anat. Mus. Univ. Edinb.*; the lower lips have a broad flap, which is to cover the baleen when developed. There is a skeleton of the same foetus prepared by Dr. Knox. The bones of the head are ossified, and show the characters of the genus; that is, the upper jaw is high, arched, and its sides are only slightly keeled, not depressed and expanded as in *Balenoptera*, &c. The jaws show the grooves for the teeth. The rest of the skeleton is only cartilaginous. These specimens are described by Dr. Knox, *Cat. Anat. Prep. &c.* 21.

There is a skeleton of a half-grown specimen, brought home by M. Guérin, being prepared in the *Anat. Mus. Univ. Edinb.* (head 6 feet long?).

## 2. *BALÆNA MARGINATA*. WESTERN AUSTRALIAN WHALE.

The baleen very long, slender (nearly eight times as long as wide at the base), pure white, thin, with a rather broad black edge on the outer or straight side.

*Balæna marginata*, Gray, *Zool. E. & T.* 48. t. 1. f. 1, baleen.  
Inhab. W. Australia.

*a, b, c.* Three plates of baleen. Length, 20 inches; width at the base, 2 inches 6 lines. Western Australia. Presented by J. Warwick, Esq.

The specimens figured in the 'Voyage of the Erebus and Terror,' tab. 1. fig. 1.

This species is only known from three laminæ of baleen. It is so much smaller and broader, compared with its width at the base, and so differently coloured from the baleen of any of the other species, that I feel justified in considering it as distinct.

†† *Baleen thick, rather brittle; enamel thin, internal fibres numerous, thick, rather intertwined, forming a thick rigid fringe.*

### 3. *BALÆNA AUSTRALIS.* The CAPE WHALE.

Uniform black. Skull convex. The nose of the skull high, straight, and rather suddenly bent down in front; the nose and the intermaxillary bones contract in the middle, and then continue of the same width in front. The hinder part of the jaw-bones is nearly perpendicular, and the temporal bones are broad and erect.—*Cuv. Oss. Foss.* v. t. 25. f. 5-7.

The foetal skull is shorter, lower, and the hinder part of the jaw-bone is more slanting.—*Cuv. Oss. Foss.* v. t. 25. f. 1-3.

Baleen is about 6 feet long, elongate triangular, rather rapidly tapering to a fine point. The internal fibres are rather coarse, but much finer than the former.

*Balæna australis*, *Desmoulin, Dict. Class. H. N.* ii. 161. t. 140. f. 3, foetus; *Gray, Cat. Mam. B.M.* 104; *Zool. Erebus and Terror*, 15, 48. t. 1. f. 3, baleen.

*B. du Cap*, *Cuv. Oss. Foss.* v. 368. t. 24. t. 25. f. 1-8, t. 26. f. 7, 11, 13, 23, t. 27. f. 10, 15, 24.

The Cape Whale, or Right Whale of South-Sea Whalers, *Bennett, Narr. Whaling Voyage*, ii. 229.

Southern Whalebone Whale, *Nunn, Narrat. Favourite*, 181, fig. ?.

Common Black Whale, *Ross, Antarctic Voy.* i. 169; ii. 327.

Inhab. South Sea, *Delalande*. Antarctic Ocean, *Ross*. Skeleton and foetus, *Mus. Paris*.

*a.* Bone of fore-arm. Cape of Good Hope.

*b, c.* Two plates of "South Sea Whalebone." Pacific Ocean? Presented by Messrs. Smith and Simmonds.

The specimens figured in the 'Voyage of the Erebus and Terror,' p. 48. tab. 1. fig. 3.

*d, e.* Two plates of whalebone. Pacific Ocean?

Mr. Warwick has kindly sent me some notes and the following

measurement of a female whale of this species taken at False Bay Fishery, said to be full-grown, and considered by the whalers as of large size :—

	ft.	in.
"Total length .....	68	0
Height of the body.....	14	0
Length of head .....	16	0
Width of tail .....	15	6
Length of ribs.....	10	6
Diameter of gullet.....	0	2

"I could not pass my hand through it. Number of vertebræ 52. From all the conversations I have had with the whalers, I do not think the Cape Whale ever attains the size of the Greenland species. These whales of the Cape, I constantly found covered with *Tubicinella Balænarum* and *Coronula Balænaris*; but the *Spermaceti Whale* was seldom or never so covered: they occur principally on the head, where they are crowded, and but rarely on the body, and then only single scattered ones."

In False Bay they carry on the fishery from the shore, and during the time Mr. Warwick was there, only one bull out of sixty specimens was killed, the females coming into the bay to bring forth their young. He skinned one, which was supposed to be not more than eight or ten days old; it was 20 feet long.

The baleen of this animal is sometimes called the Whale-fin of the "Black Fish," the name that is sometimes applied to the *Physeter Microps*.

There are sometimes imported with these baleen, a few yellowish white "fins," which seldom exceed 2 feet in length; in these, the fibres as well as the enamel are white; they are not so transparent as the pale variety of the Greenland fins before referred to; they have the same coarse texture, and are brittle like the black southern specimens; and as they do not take so good a polish, they cannot be used for making shavings for plaiting, &c.

There has lately been brought by the South Sea ships several hundredweight of a very small kind of whalebone, which is implanted in the remains of the palate, in three or four series, gradually diminishing in size towards the innermost series; each piece is linear, compressed, almost  $\frac{1}{4}$  to  $\frac{1}{2}$  of an inch wide, rounded on the edge, varying from 5 to 8 inches in length, and ending in a tuft of black hair-like fibres; in texture, colour, and external appearance it exactly agrees with the baleen of the Southern Whales, and I suspect it must form the inner part of the "screening apparatus" of that animal; and if that is the case, the existence of these separate pieces near the middle of the roof of the mouth will form a very peculiar character in this kind of whale. I am further strengthened in this belief by perceiving amongst



some short pieces of "Southern Whale-fin," probably forming the end part of a side, at the inner, or shorter or palatine edge of each blade, two or three small separate linear processes of whalebone ending a parcel of hairs similar to the pieces and form above described, but of a smaller size and rather more wavy. *Scoresby*, who gives a very detailed account of the position of the baleen in Greenland whales (*Arct. Reg.* i. 457, and ii. 415), does not mention anything of the kind in that animal; but it is described as occurring in the Fin Back by Mr. F. Knox—see *Cat. Anat. Prep.* 7. n. 5.

#### 4. BALÆNA, JAPONICA. The JAPAN WHALE.

Black; the middle of the belly to the vent, and a spot on the chin and over the eye, white; the nose with a rounded prominence in front; the head is  $\frac{3}{4}$  the entire length; the pectoral fin large, pointed.—*Temm.*

*Balæna australis*, *Temm. Fauna Japon.* t. 28, 29.

*B. Japonica*, *Gray, Zool. E. & T.* 15, 47. t. 1. f. 2, baleen.

*B. Japonica*, *Lacep. Mém. Mus.* iv. 473; ? *Desm. Mam.* 528, 802; *Fischer, Syn.* 522.

*B. lunulata*, *Lacep. Mém. Mus.* iv. 475; ? *Desm. Mam.* 528, 803; *Fischer, Syn.* 522.

Inhab. Japan, visiting the coast periodically. The head is often covered with barnacles.

This species is only described from a model, made in porcelain clay by a Japanese, under the inspection of a Japanese whaler and M. Siebold; but no remains of the animal were brought to Europe. The figures in the *Fauna Japonica* are from this model.

*B. Japonica* and *B. lunulata*, *Lacep.*, are from Chinese drawings.

Var. ? 1. North-west Whale, *Balæna Japonica*?, *Gray, Zool. Erebus and Terror*, 15. t. 1\*. f. 2, baleen.

a, b. Two plates of "North-west Coast Whalebone." North-west Coast of America. Presented by Messrs. Smith and Simmonds.

The specimens figured in the 'Voyage of the Erebus and Terror,' p. 47. tab. 1. fig. 2.

c, d. Two plates of "North-west Coast Whalebone." North-west Coast of North America.

The baleen is nearly as long as the Greenland, varying from 7 to 12 feet long, and is slender; but for the same length it is nearly twice as thick in the substance, and it gradually diminishes in thickness towards the ends. The enamel, when the outer coat is removed, is not so polished as that of the Greenland, and when cut through, the centre fibres are thicker, tubular, and occupy

about  $\frac{1}{2}$  to  $\frac{1}{4}$  of the thickness—much more in proportion than they do on the Greenland fins, and the enamel and fibre are coarser in texture and much more brittle.

The fins or blades of this whalebone are generally flexuous, or “not kindly,” so that when cut into strips, they have the defect of being variously bent, and tapering towards the end, which, with their brittleness, greatly reduces their value.

Mr. Bennett observes that “The Right Whale, so abundant, and so little molested in the northernmost waters of the Pacific, or off the north-west coast of America, is probably identical with the Greenland species.”—*Whaling Voyage*, ii. 229. The whalebone or baleen shows it is more allied to the Cape species, but apparently distinct from it.

#### 5. *BALÆNA ANTARCTICA*. The NEW ZEALAND WHALE.

*Balæna antipodarum*, Gray, *Dieffenbach*, N. Zealand, t. 1.

Right Whale, Polach, N. Zealand, ii. 401.

*Balæna antarctica*, Gray, *Zool. Erebus and Terror*, Cete, 16. t. 1, not Lesson.

Inhab. New Zealand, Jackson Bay.

Described from a very accurate drawing of a specimen taken in Jackson Bay; it is very like Temminck's figure of *B. australis*, but there is a roundish prominence on the front of the under jaw similar to the one on the nose; the latter is only figured in that species; the pectoral fin, as in that species, is about  $\frac{3}{4}$  from the chin.

M. Milne-Edwards informs me that a skeleton of this whale has been lately received by the Paris Museum.

Lesson, *Œuv. Buffon*, i. 391 (*Tab. Reg. Anim.* 202); Wagler, N. S. Aus. 33, give the name of “*B. antarctica*” to the “Right or Black Whale of the whalers of the Antarctic seas.”

Chamisso figures a species of Whalebone Whale as *Balæna Kuliomock*, found in the Aleutian seas, from a wooden model made by the Aleutians: see N. Act. Nat. Cur. t. 17. f. 1. It is noticed as *B. Culammak* by Pallas, *Zool. Ross. Asiat.* i. 288.

\*\* Back knobbed. ? *Cyphonotus*, Rafn.

#### 6. *BALÆNA GIBBOSA*. The SCRAG WHALE.

“A Scrag Whale. Is near akin to the *Fin-back*, but instead of a fin upon its back, the ridge of the after-part of its back is scragged with half-a-dozen knobs or knuckles. He is nearest the *Right Whale* (*B. mysticetus*) in figure and quantity of oil. His bone (whalebone) is white, but wont split.”—Dudley.

“A Scrag Whale,” Dudley (*Phil. Trans.* xxxiii. 259); and *Whalers*.

*Balæna gibbosa*, *Eral. Syst.* 610 (from *Dudley*); *Gmelin, S. N.* i. 225; *Bonnat. Cet.* 5; *Lacep. Cet.* 113; *Virey, N. Dict. H. N.* iii. 185; *Gerard, Dict. Sci. Nat.* iii. 440; *Desm. Mamm.* 528; *Fischer, Syn.* 523.

*B. gibbis vel nodis* sex *B. macra*, *Klein, MSS. Pisc.* ii. 15.

*B. bipennis* sex in dorso *gibbis*, *Brisson, R. Anim.* 351.

Knottenfish oder Knobbelfish, *Anders. Isl.* 225; *Crantz, Govern.* 146.

Bunched Mysticete, *Shaw, Zool.* ii. 495.

Inhab. Atlantic Ocean.

*Dudley's* account is copied by *Anderson*, *Crantz*, and all succeeding authors. It may be only a *Megapteron*.

*Cuvier* thought the Scrag Whale (*B. gibbosa*) was only a Rorqual (*Oss. Foss.* v. 267) which had been mutilated, but I suspect, from *Dudley's* account of the form, that it must be a *Balæna*, probably well known formerly. Indeed *Beale (Hist. Sperm Whale)* speaks of it as recognized by the whalers now.

*Bonnaterre*, and all succeeding authors, have referred to this genus the *Hump-backed Whale* of *Dudley*, not understanding his description of the belly "being reeved," that is, plaited; they call it *Balæna nodosa*.

*B. Back finned. Head elongate, flattened. Palate broad. Baleen short, broad, twisted when dry. Belly plaited.*

SYN. *Balænoptera*, *Lacep. Cet.*

*Mysticetus*, *Wagler, Syst. Amph.*

*Rorqualus*, *F. Cuvier, Cet.*

The whalers recognize two kinds of this division, the *Hump-back* and the *Finner*; *Cuvier (Oss. Fos.)* believed there were only two species, one inhabiting the Northern and the other the Southern ocean, and these now prove to be the types of the genera distinguished by the whalers.

Several authors having been induced by *Cuvier's* example to believe that all the *Northern Finners* were a single species, thought that the variations in the proportions might depend on the age of the specimens examined. Thus,

1. *Dr. Jacob (Dublin Journ. Science, 1825, 333)* attempts to prove that *Balæna Boops*, *B. rostrata*, *B. musculus*, and *B. jubartes* were but one species; and he has taken considerable trouble to bring together the measurements and proportions of the different specimens which have been described.

He gives an outline of his specimens, and contrasts it "with an outline of *Hunter's Piked Whale*, drawn according to the measurements given by him;" and he observes, "that the proportions of the body (of these two specimens) vary in a remark-

able manner, not only as to the situation of the umbilicus and other parts, but in the breadth of the tail, the length of the fin and arms. This, however, is what should be expected, supposing Mr. Hunter's to have been a young animal, because such proportional superiority in size of the extremities is characteristic of the earlier periods of life."

In the following table (observes Dr. Jacob), the first column contains the dimensions of each part in feet and inches; the second, the proportion which each measurement bears to the entire length of the animal, which is supposed to be 1000.

	Hunter, 17 ft.		Scoreaby, 17 ft. 6 in.		Nells, 43 ft.		Sibbald, 46 ft.		Dr. Jacob, 70 ft.		Sibbald, 78 ft.							
Breadth of tail .....	5	0	294	4	6	257	10	6	232	9	6	206	14	0	200	18	6	237
Length of arm .....	2	4	137	2	0	114	5	0	116	5	0	108	7	0	100	10	0	128
Navel to tail .....	8	0	470	..	..	..	..	..	..	..	..	..	30	0	428	..	..	..
Anus to tail .....	4	4	254	..	..	..	..	..	14	0	304	20	0	285	..	..	..	..
Fin to tail .....	4	9	279	4	6	257	12	0	279	8	6	184	20	0	285	..	..	..
Gape .....	3	3	194	3	6	200	14	0	..	10	0	217	15	0	214	13	0	166
Horny plates .....	0	5	24	0	6	28	1	6	34	..	..	..	3	0	42	3	0	38
Breadth of fin .....	1	0	58	1	3	71	2	6	58	..	..	..	2	6	35	2	0	25
Blade-bone to snout ..	2	6	147	3	0	171	..	..	6	8	144	..	..	..	..	..	..	..
Eye to ear .....	1	0	58	..	..	..	..	..	..	..	..	..	3	6	50	..	..	..
Height of fin .....	..	..	0	9	42	2	6	58	..	..	..	..	1	6	21	3	0	38

2. In the 'Zoology of the Erebus and Terror' I gave the following table of the measurements of specimens taken from the various authors cited, in feet and inches:—

	♂ Sibbald.	♂ Ravin.	♂ Schlegel.	♀ Van Breda.	♀ Scoreaby.	♀ Hunter.	♀ British Museum.
Length, entire .....	78·0	42·0	40·0	25·0	17·6	17·0	14·0
.... to mouth .....	..	..	..	4·8	..	3·3	2·8
.... to pectoral .....	19·7	10 ?	12·0	6·9	5·0	6·0	4·10
.... to navel .....	..	..	21·0	13·7	..	..	..
.... to genital organ ..	..	..	25·0	16·3	..	..	..
.... to vent or front ..	..	..	..	..	..	..	..
.... of dorsal .....	62·0	30·0	28·0	18·1	12·6	12·3	9·8
.... of dorsal fin .....	..	3·0	..	..	1·3	1·0	..
.... of pectoral fin ..	10·0	4·4	3·7	3·1	2·0	2·4	1·10
Breadth of pectoral .....	2·6	1·3	..	0·68	0·7	0·9	0·11
.... of tail .....	10·0	8·4	..	..	4·6	5·0	..

The older specimens, viz. Sibbald's male, 78, Ravin's, 42, and Schlegel's, 40, and Van Breda of Ostend's female, 82 feet long,

have the pectoral fin about  $\frac{1}{4}$  the length from the head, and from  $\frac{1}{4}$  to  $\frac{1}{10}$  (probably as the inner or outer edge is measured) of the entire length of the body, in lengths, and the dorsal about  $\frac{1}{2}$  the entire length from the nose. It would appear as if the middle of the body lengthened more rapidly than the other parts as it grew, at least the young females are shorter in proportion; for Scoresby's female, 17 feet 6 inches, Hunter's, 17 feet, and one I measured at Deptford, now in the British Museum, 14 feet long, have the pectoral rather less than  $\frac{1}{4}$  the entire length, and the dorsal and vent only about  $\frac{1}{2}$  of the entire length, from the chin, so that the interspace between the pectoral and dorsal must have doubled its length, while those fins retained their original situations with regard to the head and tail.—*Zool. Erebus & Terror*, 18.

Messrs. Knox, having purchased a whale 84 feet long, which was stranded near North Berwick on the 5th of October 1831, and another 10 feet long, taken in the stake nets at Queensferry, Firth of Forth, in February 1834, they determined by anatomical differences that they were distinct species, in a "Catalogue of Anatomical Preparations illustrative of the Whale, by F. J. Knox, Conservator of the Museum in Old Surgeons' Hall," 8vo, Edinburgh, 1838. They distinguished the former by the name of *Balæna maximus borealis*, and the latter as *Balæna minimus borealis*. As no description of the colour of the animal, or any account of the nuchal vertebrae, is given, it is impossible, from their account, to determine the species of the former; but the Catalogue contains some most interesting particulars relative to the anatomy of these animals.

Fortunately the skeleton of the larger whale was purchased by the Town Council of Edinburgh, and is now exhibited in the Zoological Gardens of that city, and, as far as it is possible to examine it at the height at which it is suspended, it is a *Physalus*; and the same as, or very nearly allied to, the species described in this work under the name of *P. antiquorum*. The *B. minimus borealis* appears to be a young specimen of the *B. rostrata* or *Pike Whale* of Hunter. Dr. Knox's drawing of this specimen, as suspended, in the act of swimming, is represented in Jardine's Naturalist's Library.

This was the first time that the *Northern Finners* had been separated on an actual examination and comparison of specimens. But the pamphlet in which these observations were published being a mere guide to the exhibition, has been overlooked, and I could only procure a copy last year after great trouble, and from the family of the authors.

Professor Eschricht of Copenhagen, who has devoted much time to the study of the anatomy and development of the Northern Finners, and has published several papers in the Danish lan-

guage on the subject, in 'Transactions of the Danish Academy' for 1845-46, has kindly translated for me the following passage in his last published paper, as the result of his examinations up to that time :—

"Of all that has been communicated in this chapter, it appears to me to be *proved*, that amongst the *Fin* Whales, at least three different species have their abode in the Northern Seas :—

" I. *In the Group of the Longimana.*

" 1. The Greenland *Keporkak*. *B. Boops*, O. Fab. *B. longimana*, Rudolphi.

" II. *In that of the Short-handed.*

" 2. The Norwegian *Vaaga kval*, *B. minor* ; and

" 3. The common great short-handed, *B. Boops*.

" To be *almost proved* that besides there exists,

" 4thly, A peculiar large short-handed species, the *Balænopterus Musculus*.

" And, at least, it is highly probable, that—

" 5thly, The Greenlandian *Kepokartrak* is the representative of a particular form ; and even that—

" 6thly, The Greenlandian *Tikagalik* or *Balæna rostrata*, O. Fab., may be a different species from the Norwegian '*Vaagekval*.'"—*Eschricht, 4th Mem.* p. 157.

In the Appendix to the 'Zoology of the Erebus and Terror,' from observation made during the progress of the work through the press, I remarked, "The account of the genus *Balænoptera*, in the former part of this essay, was only derived from the examination of a single specimen, and the comparison of the descriptions and remarks of preceding authors. Since that time, by the examination of Professor Eschricht's paper, and from personal communication with him, and the examination of the several skeletons of this genus, in different collections, I am satisfied that there are several distinct species which may be thus distinguished."

The examination of the proportions pointed out by the tables above quoted, and the measurement of other specimens, all of which I drew from scale on paper, have shown that they were permanent, and to be considered as specific or generic distinctions rather than variations in the growth of the same species, and these distinctions were further proved by the examination of the skeletons ; for it was found that the bones of the neck of the small species, which had been considered to be the young of the larger ones, were anchylosed together, while those of the larger ones were free ; and it also showed that the form of the lateral process of the nuchal vertebra was the same in specimens of different sizes from the same locality, showing that the struc-

ture of these bones depended on the mobility of the neck of the different species, fitting it for their different habit and manner of life, indicated by the size of the fins and other external characters.

Professor Eschricht (in *Forhandl. Sekand. Naturf. Kiøbenh.* 1847, 8vo, 1849, p. 103) has published a paper on the geographical distribution of some of the Northern Whales, with a map, by which it appears that *Balæna mysticetus* in Baffin's Bay lives from latitude  $65^{\circ}$  to  $69^{\circ}$  in December to June, and in July and August ascends to  $77^{\circ}$ . The *Finnolic* live in  $76^{\circ}$  in the summer, on the coast, North Greenland, and  $69^{\circ}$  in South Greenland. The *Kepporkak*  $76^{\circ}$  in North Greenland, and  $62^{\circ}$  in South Greenland.

The anatomy of these animals, and especially a description of their bones, have been given in *Albers. Anat. Comp.* t. 1; *Camper, Cetacea*, t. 11 and 12; *Rudolphi, Berl. Abhand.* 1820, t. 1-4; *Cuv. Oss. Foss.* v. 564. t. 26. f. 5; *M. Ravin, Ann. Sci. Nat.*; *Van Breda, Van der Linden*, and *J. Dubar*, in separate pamphlets on the specimen cast ashore at Ostend, which was exhibited in London some years ago.

Cuvier (*Oss. Foss.* v. 264) figures the skull of a specimen described by Lacepède, from the Mediterranean, under the name of *Rorqual de la Méditerranée* (t. 26. f. 5), and he gives a copy of the head of the skeleton of *Balæna rostrata* of *Rudolphi, Berlin Abhand.* 1820, t. 1, 2, 3, 4, under the name of *Rorqual du Nord*, *Oss. Foss.* v. t. 26. f. 6, and points out the differences between them; but the skull of the various specimens which I have examined did not offer any striking characters to separate the species.

Polach (*New Zealand*, ii. 407) describes these whales as having three fins on the back; this is probably only a false translation of Ray's *B. tripennis*, referring to it having a dorsal as well as two pectoral fins.

O. Fabricius (*Fauna Grænländica*, 36) describes *B. Boops* with the blower on a common tubercle, and covered by a common valve!

## 2. MEGAPTERA. HUMP-BACKED WHALES.

Head broad, moderate, flattened. Throat and chest with deep longitudinal folds. Dorsal fins low or tuberos, rather behind the middle of the body. The pectoral very large,  $\frac{1}{2}$  the entire length of the animal, as long as the head, consisting of only four fingers. The eyes rather above the angle of the mouth. The navel is rather before the front edge, the male organs under the back edge of the dorsal, and the vent rather nearer the tail, and the female organs are rather behind the back edge of the dorsal, with the vent at its hinder end.

Skull:—Nose narrow, broad behind, and contracted in front. Temporal bone broad. Interorbital space wide. Lower jaw much arched.—*Cuv. Oss. Foss.* v. t. 26. f. 1, 3. Cervical vertebræ well developed and separate. The first rib is forked at the end near the vertebra. The baleen is short, broad, triangular, much longer than broad at the base, rapidly attenuated, edged with a series of bristle-like fibres, which become much thicker and more rigid near and at the tip. Rather twisted, especially when dry.

The foetal specimens exhibit numerous rudimentary teeth in both jaws. These are figured by *Eschricht, Danish Trans.* iv. t. 4. f. a, b, from specimens 35 and 45 inches long.—Copied *Zool. Erebus and Terror*, t. 30. f. 2-14.

Bunch Whale, *Dudley, Phil. Trans.* xxxii. No. 387, 258.

Humpback Whale, *Whalers, Beale, Hist. Sperm W.* 12.

*Balæna nodosa, Bonnat. Cet.* 5.

*Balænoptera*, pars, *Lacep.*

*Megaptera*, *Gray, Zool. Ereb. & Terror*, 16.

*Megapteron*, *Gray, Zool. Ereb. & Terror*, 51.

*Mysticetus*, sp. *Wagler, N. S. Amp.* 33. 1840.

*Balænoptera*, § Boops, *Brandt, Voy. Al. Orient.* 4to, 1845.

? *Cyphonotus*, *Rafin. Anal. Nat.* 61. 1815 (no character nor type).

*Kyphobalæna*, *Eschricht, Nord Wallthier.* 1849, fol.

*Balænoptera leucopteron.* *Lesson, in the Nouv. Tab. Reg. Anim.*

202, gives this name to "*La Hump-back des pêcheurs*" of the "*Hautes latitudes S.*"

The *Bunch* Whales are easily known from the Finners (*Balænoptera*), in being shorter and more robust, the skull nearly  $\frac{1}{2}$  the entire length, the head wider between the eyes, the mouth larger, the lip warty, and the nose large and rounded; the plaits of the belly and throat are broad; the dorsal is more forward, the pectoral larger and narrow, about  $\frac{1}{2}$  the length of the body, and the tail is wider, and the lobes generally more pointed.

The skull of this genus is intermediate in form between that of *Balæna* and *Balænoptera*.

This kind of whale was noticed by *Dudley (Phil. Trans.* xxxiii. 258). He says, "The *Bunch* or *Hump-backed Whale* has a bunch standing in the place where the fin does in the *Fin-back*; this bunch is as big as a man's head, and a foot high, shaped like a plug pointing backwards. The bone (whalebone) is not worth much, though somewhat better than the *Fin-back*. His fin (pectoral) is sometimes 18 feet long, and very white. Both *Fin-backs* and *Hump-backs* are shaped in reeves (folds) longitudinally from head to tail, on their belly and sides, as far as their fins, which are about half-way up the sides."



This description is the origin of *Balæna nodosa* of Bonnaterre and other authors. The French authors have evidently not understood the word "reeves," and have therefore arranged these with the smooth-bellied finless whales, and Bonnaterre translates the position of the fins on the sides into "presque au milieu du corps." Dudley, when speaking of the Spermaceti Whale, says, "he has a bunch on his back like a Hump-back," which explains what he means by a bunch.

The *Hump-backs* are well known to the whalers, for Beale says, "The Hump-back Whale possesses, like the Greenland Whale, the baleen, and spouts from the top of the head, yet has a hump not very dissimilar to that of the Sperm Whale," p. 12.

Professor Eschricht, in the *Danish Transactions*, 1846, t. —, has figured the dorsal fin of this genus, and shows that it is more properly a *bunch*, as Dudley calls it, than a fin.

Cuvier (*Oss. Foss.* v. 367) thinks that the Hump-back Whale was probably only a whale of another kind whose fins had been injured, not recognizing in his Cape Rorqual the genus of Whale here noticed.

Olafsen speaks of a whale under the name of *Hnufubakr* (French translation, iii. 22), which is said to have a smooth belly, and a horn instead of a fin on the back; but the account of the animals in this work is evidently only a compilation, and this appears like an incorrect translation of Dudley.

"The Hump-back of the Southern whalers derives its trivial name from an embossed appendage or hump on the posterior part of the back. It has two spiracles or nostrils on the summit of the head, and its mouth is furnished with plates of short whale-bone. When seen on the surface of the water it bears a close resemblance to the *Sperm Whale* in colour and the appearance of the hump, as well as in a habit it has of casting its tail vertically in the air; when about to dive, the hump slopes towards the tail in a more oblique manner than does the similar appendage in the Sperm Whale.

"It is seldom molested by whalers, and is never a chief object of their pursuit, although the oil it produces is superior to that from the Right Whale (*Balæna*), and but little inferior to sperm oil.

"It is a species (genus?) frequently seen in the Atlantic and Pacific Oceans, where it occurs in small herds, and seldom at any considerable distance from land, although the vicinity of the most abrupt coast would appear to be its favourite resort. Examples are occasionally seen in the neighbourhood of the islands of the Pacific, and very frequently in the deep water around the island of St. Helena. The highest south latitude in which we noticed the species (genus) was 49°; the highest north latitude 40°, on the western side of the continent of America. Most abundant off the

bold coast of Cape St. Lucas, California."—*Bennett, Whaling Voyage*, ii. 232.

Capt. Sir James Ross observed them as far south as  $71^{\circ} 50'$ .

Professor Eschricht believes the *Keporkap* of Greenland and the *Bermuda Whale* is the same species, and that it migrates from Greenland to Bermuda, according to the season; and he states that he cannot find any sufficient distinction in the skeleton of the *Cape specimen* in the Paris Museum, to separate it as a species from the Greenland examples.

Schlegel considers *Balæna longimana* of the North Sea, the *Rorqual du Cap*, and the drawing he received from Japan, as all belonging to a single species, though he owns there are differences between them.

I am inclined to doubt these conclusions, and have therefore, until we have more conclusive evidence, considered it advisable to regard them as separate; especially as Cuvier's (*Oss. Foss.* v. 381) description of the union of the lateral processes of the cervical vertebra of the Cape specimen is very different from those of the Greenland specimens in the Museum, received from Professor Eschricht: see *Proc. Zool. Soc.* 1847, 88.

#### 1. MEGAPTERA LONGIMANA. JOHNSTON'S HUMP-BACKED WHALE.

Cervical vertebræ all free.

Black, pectoral fin and beneath white, black varied; lower lip with two series of tubercles; pectoral nearly  $\frac{1}{2}$  the entire length; dorsal elongate, the front edge over end of pectoral; throat and belly grooved.

Female: upper and lower lip with a series of tubercles; dorsal an obscure protuberance.—*Johnston, l. c.* t. 1.

? *Balæna musculus*, *Ascan. Icon. Rer. Nat.* iii. t. 26, *cop. Bonnat. Cet. E. M.* t. 371; *Schreb. Saugth.* t. 335.

? *Balæna Boops* (Keporkak), *O. Fab. Faun. Græn.* 36? not Linn. Keporkak or *Balæna Boops*, *Eschricht, K. Danske Vind. Selskabs. Afh.* 1845, xi. 239. t. 1 & 3, 4.

*Kyphobalæna* (Boops), *Eschricht, Nord. Wallthier.* 1849.

*Balæna longimana*, *Rudolphi, Mem. Acad. Berl.* 1829, 133. t. 12, *mas, cop. Brandt and Ratzeburg*, t. 15. f. 2.

Whale, *Johnston, Trans. Newcastle N. H. Soc.* i. 6. t. 1, female on back.

*Megaptera longimana*, *Gray, Zool. E. & T.* 17.

*Megapteron longimana*, *Gray, Zool. E. & T.* 51; *Proc. Zool. Soc.* 1847, 89.

Inhab. North Sea, mouth of the Maese, *Rudolphi.* Newcastle, *Johnston.*

a. Stuffed specimen, young. Greenland. Professor Eschricht's Collection.

Megapteron Boops, *Eschricht*.

b. Skull of adult. Greenland. Professor Eschricht's Collection.

c. Baleen of skull b. " " "

d. Skeleton. " " "

The cervical vertebræ are all free. The second cervical vertebra has two very large, thick, converging lateral processes, as long as half the diameter of the body of the vertebra. The third, fourth, fifth, sixth and seventh have elongated slender superior lateral processes which bend rather downwards, and the sixth and seventh rather forwards. The fourth and fifth have a very short rudimentary inferior lateral process, which is smaller on the left side. The other vertebræ are without any.

The upper part, or the spinous process of the second vertebra is very large and convex, covering this part of the next vertebra. —Gray, *P. Z. Soc.* 1847, 92.

Dr. Johnston's description chiefly differs from Rudolphi's in both lips having a row of tubercles, and in the dorsal being said to be a small obscure protuberance; but the animal laid on its back, sunk in the sand.

Rudolphi (*Berl. Abhand.* 1829, t. 1, 4) figures the bones of this species, with enlarged details of the skull. They nearly resemble the skull of the Cape Rorqual of Cuvier in form, but the nasal bones are broad and nearly of the same width from the front of the blow-holes to near the tip, where they gradually taper: the temporal appear more quadrangular.

According to Professor Eschricht, this is the most common whale in the Greenland Seas. In the Danish Transactions he has given a figure of this species, and a very detailed account of its anatomy and development, chiefly founded on the examination of the fœtus.

He observes, "This animal is always infested with *Diadema Balænarum*, and with a species of *Otion*, which he regards as new, while the Cirripedes are never found on any species of *Balænoptera*. On the other hand, the *Tubicinella*, *Coronula Balænaris* and *Otions* are often found on the *Balæna Mysticetus* or Right Whale of the Southern Seas: see *Eschricht*, 144.

The following descriptions must be referred to this species with doubt; as both agree with true *Balænoptera* in the position of the genital organs and vent compared with the dorsal fin, and Fabricius especially says the pectoral fin is composed of five fingers.

Ascanius (*Icon. Rer. Nat.* iii. t. 26) gives a figure of a female Rorqual with a plaited belly, 66 feet long, from the North Sea,

which he thought might be *B. musculus* of Linnæus (it is not well copied by Bonnaterre, *E. M.* t. 3. f. 1, and Schreber, t. 335), which has a large pectoral fin, about  $\frac{3}{4}$  the length of the body; but the drawing is not so good as the others in the work, and the fin is so awkwardly applied to the body, that perhaps its size may depend on the incompetence of the artist. The dorsal fin, which is only indicated as if doubtful in the original figure, is continued to the tail, but in Bonnaterre's copy it is represented as of equal authority with the other part.

Fabricius (*Faun. Græn.* 37), five years after, described a *Balænoptera* under the name of *B. Boops*, Linn., which appears to differ from *B. Physalus*, for he described the "Pinnæ pectorales magnæ, obovato-oblongæ, margine postica integra, regione cubiti parum fractæ, antica autem rotundato-crenata." And, he continues, "Ante nares in vertice capitis tres ordines convexitatum circularium, huic forsitan peculiare quid,"—"Pinna dorsalis compressa, basi latior, apice acutiuscula, antice sursum repanda, postice fere perpendicularis," and "Corpus pone pinnam dorsalem incipit carina acuta in pinnam caudalem usque pergens."

Rudolphi, and after him Schlegel, refers *B. Boops*, O. Fabricius, to this species; and Professor Eschricht has no doubt that *Balæna Boops* of O. Fabricius is intended for this species, as it is called *Keporkak* by the Greenlanders. If this is the case, Fabricius's description of the form and position of the dorsal fin, and the position of the sexual organs, is not correct.

Brandt, in the list of Altaian animals (*Voy. Alt. Orient.* 1845, 4to), has adopted this opinion, and formed a section for *Balænoptera longimana*, which he calls *Boops*, merely characterized as "Pectoral elongate."

Schlegel refers the *Rorqualus minor* of Knox to this species, probably misled by the inaccurate figures of this species in Jardine's *Nat. Lib.* vi. t. 6. See note on this figure under *Balænoptera rostrata*, p. 33.

Schlegel points out that Rudolphi and M. F. Cuvier, in their description of *B. longimana*, have confounded the figure of *Balæna du Cap* and *Rorqual du Cap*, of Cuvier's *Ossemens Fossiles*, together.—*Faun. Japon.* 21, note.

## 2. MEGAPTERA AMERICANA. BERMUDA HUMP-BACK.

Black; belly white; head with round tubercles.

Whale (Jubartes?), *Phil. Trans.* i. 11 (1665).

Bunch or Hump-backed Whale of Dudley, *Phil. Trans.* xxxiii. 258.

*Balæna nodosa*, Bonnaterre, *Cet.* 5, from Dudley.

*Megaptera Americana*, Gray, *Zool. Ereb. & Terror*, 17.

*Megapteron Americana*, Gray, *Zool. Ereb. & Terror*, 52.  
Inhab. Bermuda, March to end of May, then leave.

I have a tracing of the *Bermuda Whale*, but do not know from whence it was derived: it is said to be common in that island. It is very like the figure of *Megaptera longimana*, but the dorsal fin is represented as lower, and the tail wider. This is doubtless the Whale described in *Phil. Trans.* i. 11 and 132, where an account is given of the method of taking it. It is described thus:—"Length of adult 88 feet; the pectoral 26 feet (rather less than  $\frac{1}{4}$  the entire length), and the tail 23 feet broad. There are great bends (plaits) underneath from nose to the navel; a fin on the back paved with fat like the caul of a hog; sharp, like the ridge of a house behind; head pretty bluff, full of bumps on both sides; back black, belly white, and dorsal fin behind."

"Upon their fins and tail they have a store of clams or barnacles, upon which he said rock-weeds and sea-tangle did grow a hand long.

"They fed much upon grass growing at the bottom of the sea: in their great bag of maw he found 2 or 3 hogshead of a greenish grassy matter."—*Phil. Trans.* i. 13.

Baleen from Bermuda, called *Bermuda finner*, is extensively imported; it is similar to the baleen of the *Grey Finner*.

### 3. MEGAPTERA POESKOP. POESKOP, OR CAPE HUMP-BACK.

Dorsal nearly over the end of the pectoral.

Intermaxillary narrowed and contracted in front.

Temporal bone broad, triangular.

"Second and third cervical vertebræ united by the upper part of their body."—*Cuvier*.

Rorqual du Cap, *Cuv. Oss. Foss.* v. 370. t. 26. f. 1-4. Skull, t. 26. f. 19 to 21. *Verteb.* f. 9 & 22. *Fins*, f. 24. *Pelvis*, t. 25. f. 15, tongue bone, all from Lalande's specimen.

B. Balænoptera Poeskop, *Desmoulin, Dict. Class. H. N.* ii. 164, from Lalande's MSS.

B. Lalandii, *Fischer, Syn.* 525, from *Cuvier*.

B. Capensis, *A. Smith, from Cuvier*.

*Megaptera Poeskop*, Gray, *Zool. E. & T.* 17.

Rorqual nouveau, *Voy. Pol Sud*, t. 24, fem. not described.

Balænoptera leucopteron, *Lesson, N. Tab. Reg. Anim.* 202.

Hump-backed Whales, *Ross, Antarctic Voy.* i. 161, 191; *Mitchell, Trav. Austr.* ii. 241; *Beale, H. Sperm. W.* 12, 30.

Inhab. Cape of Good Hope, *Lalande*; called *Poeskop*. *Skeleton, Mus. Paris*.

Lalande's account was published by Desmoulin, who merely

gives the following particulars, except what appears to be common to the genus. He says, "it has a boss on the occiput, and its dorsal is nearly over the pectoral;" in the European and Bermudean figures it is over the end of these fins.

Cuvier's figures of the adult skull differ from Rudolphi's figure of *M. longimana*, in the intermaxillaries being narrower and contracted in front of the blowers, and then rather widened again and linear, and the temporal bone is broader and more triangular; which makes me believe it is a distinct species.

M. Desmoulin, in describing this species, pointed out the two most important characters of the genus, viz. the length of the pectoral, and their only having four fingers.

#### 4. MEGAPTERA KUZIRA. The KUZIRA.

Dorsal small, and behind the middle of the back; the pectoral fin rather short, and less than  $\frac{1}{4}$  the entire length of the body; nose and side of the throat have round warts; belly plaited.

*Balæna antarctica*, Temm. *Fauna Japon.* 27.

*Balenoptera antarctica*, Temm. *Faun. Jap.* t. 30, not t. 23.

*Megaptera antarctica*, Gray, *Zool. Ereb. & Terror*, 17.

Inhab. Japan.

The figure in the 'Fauna Japonica' is from a drawing brought home by M. Siebold, not accompanied by remains. M. Siebold observes that the Japanese distinguish three varieties:—

1. *Sato Kuzira*. Black, nose more elongate and rounded, and the pectoral long; the belly and lower face of the pectoral are grey, with white rays.

2. *Nagasu Kuzira*. Paler, nose more pointed, the belly has 10 plaits. In both, the lower jaw is larger than the upper.

3. *Noso Kuzira*. Distinguished from the first because the back and fins are white-spotted.—*Faun. Jap.* 24.

Forster, in *Cook's Voyage*, appears to have met with a species of this genus between Terra del Fuego and Stratten Island. He says, "These huge animals lay on their backs, and with their long pectoral fins beat the surface of the sea, which caused a great noise, equal to the explosion of a swivel."

Lesson (*Tab. Reg. Anim.* 202) gives the name of *B. leucopteron* to "the Hump-back of the whalers in the high southern latitudes."

Mitchell (*Travels Australia*, ii. 241) speaks of a *Hunch-backed Whale* which inhabits Portland Bay, Australia Felix.

Chamisso figures a species of this genus from the Aleutian seas, under the name of *Aliomoch* or *Aliama*, when young, *Aliamagadach* (*N. Acta Nat. Cur.* xii. 258. t. 18. f. 5; *Fischer, Syn. Mam.*

527. n. 4), from a wooden model made by the Aleutians: and Pallas (*Zool. Ross. Asiat.* i. 288) calls it *Balæna Allamack*. The pectoral fins are long; they, and the underside of the tail are white.

This genus is also found in the seas of Java, for there is an imperfect skull, brought from that country by Professor Reinwardt, in the Leyden Museum.—*F. Japon.* 24.

Pallas, under the name of *B. Boops*? (*Zool. Ross. Asiat.* 291), describes a whale which appears to belong to this genus, found at Behring's Straits by Steller, when he was shipwrecked. The head was  $\frac{1}{4}$ , the pectoral fin  $\frac{1}{4}$ , the entire length, and the vent  $\frac{1}{10}$  from the head, as by the following measurement:—length, 50 feet; head, 12 feet; pectoral fin, 10 feet long and 5 feet wide; tail, 16 feet wide, and the vent 35 feet from the head. If these measurements are correct, the pectoral fin is shorter and much wider than they generally are in this genus. The position of the dorsal fin is not noted.

In the *Zoologia Ross. Asiat.* 293, Pallas described a whale under the name of *B. musculus*, observed by Merle at Kamtschatka. It was long and slender, ash-brown, white-clouded above, snow-white beneath, and spotted on the sides. It was 22 feet 6 inches long; the dorsal was 6 feet from the tail, and 1 foot 11 inches high; behind the fin the back was 2-keeled; the pectoral fin was rounded at the end, and 10 feet 7 inches distant from the tip of the beak, 4 feet 2 inches long and 1 foot 2 inches wide: behind the vent, 7 feet before the tail, and 3 feet from the vent, is a white kind of fin, and the genital organs are 1 foot 3 inches before the vent. If this description and these measurements are correct, it must be a most distinct species, if not a peculiar genus: the pectoral fins are nearly in the middle of the body, and I know of no whale with a fin behind the vent beneath, and with the genital organs nearly under the pectorals. The pectoral is almost  $\frac{1}{4}$  the entire length.

### 3. BALÆNOPTERA.

Head elongate, flattened. Throat and chest with deep longitudinal folds and very dilatable. The dorsal fins compressed, falcate,  $\frac{1}{3}$  the length of the body from the head and behind the line above the orifices of generation. The pectoral fins moderate,  $\frac{1}{4}$  the length of the body,  $\frac{1}{4}$  the length of the body from the head.

The second and third cervical vertebræ united by the spinous process, rest well-developed and separate. The lateral processes of the second cervical vertebra rather expanded and ring-like.

Vertebræ 46 to 48.

Balænoptera, pars, *Lacépède, Cetac.*

Balænoptera, Sect. 1 (Balænoptera), *Gray, Zool. Ereb. & Ter.* 50.

Balænoptera, *Gray, Proc. Zool. Soc.* 1847, 89.

Pterobalæna, pars, *Eschricht, Nord Wallthier*, 1849, fol.

Balæna, pars, *Linn. ; Müller, Zool. Dan. ; Illiger, Prod.* 242.

Rorqualus, sp. *Dekay ; F. Cuvier, Cetac.* 321.

Balæna minimus, *Knox, Cat. Whale*, 14.

Dr. Knox found eight distinct bristles arranged in perpendicular rows on the extremity of the snout, in each jaw (*Knox, Edin. N. Phil. Journ.* 1834).

### BALÆNOPTERA ROSTRATA. PIKE WHALE.

Black, beneath reddish white. Pectoral fin white near the base above.

Balæna rostrata, *Müller, Prod. ; O. Fab. Faun. Græn.* 40; *Hunter, Phil. Trans.* lxxvii. t. 20-23, cop. *E. M.* t. 4.

Rorqualus rostratus, *Dekay, Zool. New York Mus.* 730. t. 30. f. 1.

*B. musculus*, pars, *Flem. B. A.* 30.

*B. Boops*, pars, *Flem. B. A.* 31.

Balænoptera acuto-rostrata, *Lacép. Cetac. ; Scoresby, Arct. Reg.* i. 485. t. 13. f. 2.

Balænoptera acuto-rostrata, *Lesson, N. T. R. A.* 202.

Balænoptera microcephala, *Brandt, MSS.*

Balæna minimus borealis, *Knox, Cat. Whale*, 14.

Rorqualus minor, *Knox, Jardine, Nat. Lib.* 142. t. 7.

*B. borealis rostrata*, *Fischer, Syn.* s. 25.

*B. Boops*, *Albert. Icon. Anat.* 1822, t. 1; *Camper, Cetac.* 74. t. 11, 12; *Cat. Col. Surg.* 171. n. 1194, *Hunter's spec. ?*

Balænoptera Boops, Fin-backed Whale, *Newman, Zoologist*, i. 33, fig.

Rorqualus Boops, *F. Cuv. Cetac.* 321. t. 20.

Balænoptera Physalus, *Gray, Zool. E. & T.* 18.

Vaagelval, *Eschricht, K. D. Vidensk. Selsk.* xi. t. 1, 2, and p. 286-299, *fœtus and anat.*

Balænoptera rostrata, *Gray, Zool. Ereb. & Terror*, 50. t. 2, *skull*, t. 1. f. 3, *baleen*; *Proc. Zool. Soc.* 1847, 90.

Pterobalæna minor, *Eschricht, Nord Wallthier*, 59, 1849.

Inhab. North Sea. New York Bay, *Dekay*. Valognes, France, *Geoffroy*. Greenland. Norway.

a. Stuffed specimen. Young. Thames at Deptford.

b. " " Very young. Greenland.

c. \*Plates of baleen from a. Thames at Deptford.

Figured *Zool. Erebus & Terror*, t. 1. f. 3.

d. Skeleton. South Greenland. From Mr. Brandt's Collection.



The skull figured, *Zool. Erebus and Terror*, t. 2, is 46·6 inches long, 28·0 at the beak, 23·0 inches wide at the orbit, 15·6 at the notch, and 10·6 in the middle of the nose. The nose of the skull is elongate-triangular, with straight, regularly converging sides, not quite twice as long as the width at the notch.

The first cervical vertebra is rather broader than long. The central hole is half as high again as broad. The second and third cervical vertebræ are united together by the upper edge.

The second cervical vertebra has a broad, much-expanded, lateral process, with an oblong central hole near the body of the vertebra, reaching rather more than half its length.

The third, fourth, fifth and sixth cervical vertebræ have two, or upper and lower, lateral processes. The upper process of the third is the shortest and least developed, and they increase in length to the sixth. The lower process of the third is the thickest. The fourth and fifth rather small, and in the sixth the basal part of the process is shorter and the upper part much elongated and thinner.

The seventh is only the upper process, which resembles that of the first dorsal in form, but is smaller.

This species, which is the smallest of the family, scarcely if ever exceeds 25 or 30 feet in length.

The skeleton of the "young *Balæna Boops*" (No. 1194, *Mus. Col. Surg.*), which formed part of the Hunterian collection, and is probably the skeleton of the *B. rostrata* described by John Hunter (as the head is about 4 feet long, which agrees with the measurements of his figure of the animal), belongs to this species.

Dr. Knox examined a young *Rorqual*, 9 feet 11 inches long; 3 feet from snout to ear, and 4 feet 8 inches in girth, at the end of the folds, which was cast ashore near Queensferry, Firth of Forth, in 1834. He considers it quite distinct from the Great Rorqual (*B. Boops*), because it has only 11 dorsal, 36 lumbar, sacral and caudal vertebræ; but he considers it the same as *B. rostrata* of O. Fabricius, Hunter and Scoresby (*Edin. N. Phil. Journ.* 1834, 199). Dr. Knox's specimen is figured by Jardine under the name of the *Lesser Rorqual* (*Nat. Lib.* vi. t. 7). Schlegel (*Fauna Japon.* 24, and *Abhand.* 44) erroneously refers to this figure as a representation of *Balenoptera arctica* (*antarctica*); for though the pectoral in the figures is larger in proportion than they should be for a *Balenoptera*, they are not of the shape of the fins of *Megaptera*; and the artist has made the fins of both the animal and skeleton of the larger Rorquals too large in proportion for the other parts of the body, and perhaps the length of the body is fore-shortened.

Professor Eschricht observes that "the Greenland *Tikagulik*, or *Balæna rostrata* of O. Fabricius, may be distinct from the Norwegian *Vaagekval* or *B. minor*," 4th Mem. 157. Our Greenland skull does not appear to differ from that of the English skeleton.

#### 4. PHYSALUS.

The head elongate, flattened. The eye is near the angle of the mouth, and the blowers lunate, covered by a valve and separated by a longitudinal groove. The throat and chest with deep longitudinal folds and very dilatile. The dorsal fin compressed, falcate,  $\frac{3}{4}$  the length of the body from the nose, behind the line over the orifice of generation. The pectoral moderate, about  $\frac{1}{2}$  the length of the body,  $\frac{1}{4}$  the length of the body from the nose, of four fingers. The vent under the front of the dorsal fin. Male organs  $\frac{1}{2}$  from the chin, in front of line of dorsal; female near vent.

Vertebræ 54 to 64; cervical vertebræ all separate and free.

The skull is broad, depressed; nose broad, gradually tapering, with straight sides, with a narrow interorbital space.—*Cuv. Oss. Foss. v. 373. t. 26.*

The baleen is short, broad, triangular, rather longer than broad at the base, and edged with a series of elongate, unequal, bristle-like fibres, which become much thicker and more rigid near the upper tip. It is internally formed of one or two crowded layers of thick tubular fibres, covered on each side with a thin coat of enamel, which becomes thinner and thinner near the edge, where the fibres are free; always twisted.

These animals are often called *Razor-backs*, *Piked Whales*, by the sailors.

The *baleen* or fin of the *Finners* is only used to split into false bristles, but for this they are inferior to the Southern or lowest kind of *baleen* of the *Balæna*.

*Balenapterus*, sp. *Lacep.*

*Balenopterus*, sp. *Lacep.*; *F. Cuv. D. S. N. lxi. 518.*

*Balænoptera*, sp. *Lacep. Cet.*

*Balænoptera*, Sect. 2 & 3, *Gray, Zool. Ereb. & Terror, App. 50. 1846.*

*Pterobalæna*, pars, *Eschricht, Nord Wallthier, 1849.*

(*Catoptera* or) *Cetoptera*, *Rafin. Anal. Nat. i. 219, 1815.*

*Mysticetus*, sp. *Wagler, N. S. Amph. 33.*

*Balæna*, sp. *Linn.; Illiger, Prod. 142, 1811.*

*Physalis*, *Fleming, Brit. Anim. 1828.*

*Physalus*, *Lacep. Cet.*; *Gray, Proc. Zool. Soc. 1847, 90; Brandt.*

*Physelus*, *Rafin. Anal. Nat. 60, 1815.*

Ray calls these *Balæna tripennis*, thus separating them from those which have no dorsal fin; but Polach misunderstood him, and says they have three fins on their back.

Sibbald (*Phalænologia Nova*, 1692) figures two specimens of this genus caught on the coast of Scotland. Ray (*Hist. Piscium*, 17) notices these specimens; and Brisson and Linnæus have regarded them as separate species. Linnæus designated the one with the skin under the throat dilated, *Balæna musculus*, and the other, with this part contracted and flat, *B. Boops*. Now, as I proved by the examination of the specimen we have in the British Museum, when alive, and as M. Ravin observes (*Ann. Sci. Nat.* v. 275), this skin is very dilatable, so that these characters appear to depend on the manner in which the specimen might lie when drawn, and the quantity of gas which might have been produced by the decomposition of the interior. Ray, and after him Brisson and Linnæus, established a third species, *B. Physalus* (*S. N.* i. 186), on the *Fin-fish* of Martens (*Spitz.* 125. t. Q. f. c), copied *E. M.* t. 2. f. 2, which well represents this genus; yet as there are no folds on the belly in the figure, it has been regarded by most authors as distinct from the *B. rostrata* of Müller and Hunter, and the other species of Sibbald; but the name used by Martens being the one now given by the Greenland whalers to these whales, I think at once shows that it properly belongs to this genus: and Martens neither mentions the colour, nor says a word about the belly. Scoresby, who calls the *Fin-fish* *B. gibbar*, after Bonnaterre, says from report that the "skin is smooth, except about the sides of the thorax, where longitudinal rugæ or sulci occur," which at least must be a *Balænoptera*. Lacepède formed the *Fin-fish* of Martens, the Hunch-back and Scrag Whale of Dudley, into a section, which he calls *Rorqual à ventre lisse*. The Hunch-back has a "reeved" or plaited belly, and the Scrag Whale is shaped like, and doubtless is, a true *Balæna*; yet these species are kept together as a subgenus in Fischer and other modern systematic works: and Dr. Fleming has made Lacepède's section into a genus, under the name of *Physalis*.

The examination of the skeleton has shown that there are several species found in the North Sea characterized by the bones of the neck and by the external colour; and I think there is little doubt that, when we have had an opportunity of comparing the skeletons of the Finner Whales found in the other seas, especially of those in the Southern hemisphere, we shall find that they are perfectly distinct from those here described.

The following synonyma of Northern species of Fimmers appear to belong to this genus, but it is not possible to apply them with any certainty to the species here described:—

1. *Balæna tripennis* quæ rostrum acutum habet, *Sibbald, Phalæmol.* 29. t. 1. f. D, E, cop. *Bonnat. Cet. E. M.* t. 3. f. 2; *Schreb.* t. 354.  
 Pike-headed Whale, *Penn. B. Zool.* iii. 40.  
 B. Boops, *Linn. S. N.* i. 106.  
 B. borealis var. Boops, *Fischer, Syn.* 524.  
 Balænoptera jubartes, *Lacep. Cet.* 120. t. 4. f. 1.  
 Jupiter-fish, *Anderson, Isl.* 220.  
 Pike-headed Mysticete, *Shaw, Zool.* ii. 492. t. 227.
2. *Balæna tripennis* quæ maxillam inferiorem rotundam, &c., *Sibbald, Phalæmol.* 33. t. 3; (*Edit.* 1792), 78. t. 3, cop. *Bonnat. Cet. E. M.* t. 3. f. 1.  
 Round-lipped Whale, *Pennant, Quad.* iii. 42.  
 B. musculus, *Linn. S. N.* i. 106.  
 B. borealis musculus, *Fischer, Syn.* 524.  
 Balænoptera rorqual, *Lacep. Cet.* 126. t. 1. f. 3.  
 Under-jawed Mysticete, *Shaw, Zool.* ii. 495.
3. Fin-whale, *Neill, Wern. Trans.* i. (1811) 201.  
*Balæna sulcata*, *Walker, MSS.* ?; *Neill, Wern. Trans.* i. 212.
4. *Balæna sulcata arctica*, *Schlegel, Verhand. Nederl. Ins.* i. 1828, t. 1, 2; *Abhand.* t. 6.
5. Baleinoptère d'Ostende, *Van der Linden, Baleinoptère Bruzell.* 1828; *Dubar, Osteographia, &c. Brux.* 1828, t. ; *Van Breda en letter bode*, 1827, 341; *Scharff's drawing of Ostend Whale*, t. .  
 Great Northern Rorqual, *R. borealis*, "Lesson," *Jardine, Nat. Lib.* 125. t. 5, from *Scharff*.  
 B. borealis, *Fischer, Syn.* 524.
6. *Balænoptera sulcata*, *Jacob, Dublin Journ. Sci.* 1825, 333.
7. Finne Fische, *Egede, Grænl.* 48 fig.
8. Fin-fisch, *Mart. Spitzb.* 125. t. Q. f. c, cop. Fin-backed Mysticete, *Shaw, Zool.* ii. t. 227; *Ency. Méth.* t. 2. f. 2.  
*Balæna Physalus*, *Linn. S. N.* i. 106; *Schreb. Saughth.* t. 333, from *Martens*, t. 5. f. 2.  
 B. gibbar, *Desm. Mamm.* 528. *Balænoptera gibbar*, *Lacep. Cet.* 114. t. 1. f. 3, from *Martens*.  
 B. edentula, &c., *Ray, Syn.*
9. *Balænoptera arctica*, *Schlegel, Abhand.* ii. 10. t. 9.
10. *Balænoptera Boops*, *Yarrell, Proc. Zool. Soc.* 1840, 11. A female, 44 feet long. Pectoral 10½. Vertebrae 60. Ribs 14.

11. M. Cuvier's *Rorqual de la Méditerranée* is founded on the skull of a whale described by Lacepède (*Cetac.* t. 5-7) which was stranded near the Isle of Marguerite in 1797. Lacepède gives the following measurements: viz. length, 60 feet; length to the pectoral, 14 feet 6 inches; from thence to dorsal, 10 feet 9 inches; and from dorsal to caudal, 8 feet 9 inches: but there must be some mistake, as this makes only 34 feet. The pectoral was 5 feet long, and all black. Cuvier (*Oss. Foss.* t. 26. f. 5) represents the head of this specimen. M. F. Cuvier regards this specimen as the type of his *B. musculus* (*Cetac.* 334).

M. F. Cuvier's *Cetacea* refers to the Mediterranean Rorqual (*B. musculus*), a male whale described by M. Companyo, which was cast ashore near St. Cyprien. It was 25,060 metres (82 feet) entire length; the head 5,038 metres (16 feet); length of pectoral 2,010 (13 feet). It had 7 cervical, 14 dorsal, 15 lumbar, and about 25 caudal vertebræ, in all 61. It was dark grey, with the throat and the sides of the pectoral white, the belly blue and white banded, pectoral greyish. Professor Eschricht believes this to be the species I have named *Physalus antiquorum*. The skeleton was at Lyons in 1835.

M. Van Beneden found by examining an ear-bone brought from Iceland by M. Quoy, that it belonged to the Rorqual de la Méditerranée of Cuvier (see *Ann. Sci. Nat.* n. s. vi. 159).

Albers (*Icon. Anat.* 1822, t. 1) figures, under the name of *Balæna Boops*, the skeleton of a whale cast ashore at Vegisack near Bremen, in 1669. The length was 29 feet; length of pectoral fin 3, width of tail 9. Camper (*Cetac.* 74. t. 11, 12) figures the skull of this specimen. Cuvier says he compared this skull with the one from St. Marguerite's, figured by Lacepède, and could see no difference between them. Albers's figures would lead to the idea that the lower jaw was scarcely wider than the upper; this is corrected by Camper. Professor Eschricht considers Albers's specimen the same as Hunter's *B. rostrata*; but it agrees with the whales of this genus in having 34 and 35 lumbar and caudal vertebræ.

12. *Balæna rostrata*, Rudolphi, *Berl. Abhand.* 1820, t. 1-4.

Rorqual du Nord, Cuvier, *Oss. Foss.* v. 564. t. 26. f. 6, copied from Rudolphi.

*Balænoptera laticeps*, Gray, *Zool. Ereb. & Terror*, 20, from Rudolphi.

Black, beneath white; upper jaws wide, in the skull only twice as long as the width of their base in front of the orbits, the lower ones slightly curved and scarcely wider than the edge of

the upper ones. Pectoral fin  $\frac{1}{2}$  the entire length, and rather more than  $\frac{1}{4}$ , and the dorsal nearly  $\frac{1}{2}$ , from the nose.

Inhab. North Sea, coast of Holstein, 1819, *Rudolphi*.

The length was 31 feet 1 inch; from nose to the eye, 2 feet 9 inches; to blower, 3 feet 11 inches; to pectoral, 3 feet  $6\frac{1}{2}$  inches; to the front of the dorsal, 19 feet 2 inches; to the vent, 21 feet.

Cuvier copies the figure of the head of this whale as that of the Northern Rorqual, and points out its distinctions from that which he had received from the Mediterranean. The nasal bones appear much broader than in the small common Finner, *Baleoptera rostrata*.

13. *Baleoptera à bec*, *Ravin*, *Ann. Sci. Nat.* x. 266. t. 11; xv. 337. t. 9, young male.

"Black above, beneath white. Pectoral black. Dorsal and caudal with white scar on the edge. Baleen of the first part of the series white; of the rest blackish blue, the colour changing suddenly from one to the other.

"Inhab. coast of France, Somme. *Ravin*."

M. *Ravin* (*Ann. Sci. Nat.* n. s. xv. t. 9) figures the skull; but although it generally resembles Cuvier's figure above quoted, it is shorter and broader in proportion, being only twice the length of the width of the jaws in front of the orbit.

14. Pallas, under the name of *B. Physalus* (*Zool. Ross. As.* 290), described a specimen of this genus found in the North Sea in 1740. It was 84 feet long; the pectoral 9, the head 22 feet long, and the tail 14 feet wide. He describes the skin as brown.

\* *The transverse apophysis of the cervical vertebræ much expanded, united, forming a ring on the second and sixth vertebræ. Lumbar vertebræ very large and thick. Physalus.*

# 1. PHYSALUS ANTIQUORUM. The RAZOR BACK.

Slate-grey, beneath whitish. Baleen slate-coloured, under edge blackish, inner edge pale streaked.

Razor-back of the Whalers. "*B. Physalus*, *Linn.* *B. Gibbar*, *Lacep.*"—*Scoresby*, *Arct. Reg.* t. 479.

? Great Northern Rorqual, *Knox*; *Jardine*, *Nat. Lib.* t. 6, skeleton.

Rorqual de la Méditerranée, *Cuv. Oss. Foss.* v. 370. t. 26. f. 5, skull.

*Balæna antiquorum*, Fischer, *Syn.* 525.

*Balænoptera antiquorum*, Gray, *Zool. Ereb. & Terror*, 50.

*Physalus antiquorum*, Gray, *Proc. Zool. Soc.* 1847, 90.

*Balænoptera musculus*, F. Cuv. *Cetac.* 335; *Eschricht's MSS.* (not Linn.)

? *Balein de Sainte Cyprien*, *Companyo, Mem.* 4to, 1830; *Carcassonne and Farines, Mem.*; F. Cuv. l. c. 337.

? *Balænoptera Boops*, Yarrell, *Proc. Zool. Soc.* 1840.

Inhab. North Sea. Berwick, 1831, *Dr. King*. *Hamburgh, Rudolphi*. Coast of Hampshire, 1842. Skeleton at Black-gang Chine. Greenland, *Eschricht*. St. Cyprian, in *Mus. Lyons*, 1838.

a. Two plates of baleen. Needles, coast of Hampshire, from the skeleton at Black-gang Chine.

b. Several plates of baleen united together. Greenland, from Mr. Müller's collection.

c. Skeleton, 74½ feet long. Plymouth.

The transverse apophyses are as broad as the body of the vertebra, and the latter is oblong, half as broad again as high.

The lateral processes of the cervical vertebræ are much longer than the width of the body of the vertebræ; the lateral process of the second cervical has a small, nearly central perforation, and this perforation gradually becomes larger on each succeeding vertebra, until it nearly occupies the whole disk of the lateral process in the sixth; the seventh being only formed with a narrow elongated process from the upper edge, the lower process being reduced into the form of a small tubercle.

Vertebræ 54: viz. 7 cervical, 13 dorsal, 17 lumbar and 17 caudal. The ribs are simple.

The lumbar vertebræ are thick and large; both these characters must render this Finner much more powerful and active in the water than any of its allies. The lower jaw is 17 feet long; the blade-bone 32 inches by 51. The upper arm-bone 20 inches long by 10½ wide; the lower arm-bone 31 inches long. The chest-bone is 28 inches wide and 18 inches long.

The lumbar vertebræ are 11 inches long and 14 inches wide; the first rib 59 inches long and 10½ inches wide at the sternal end.

The specimen was found floating on the sea in a decomposed state, on the 2nd of October 1831, in Plymouth Sound, and is said to have been 102 feet long and 75 feet in circumference; but most likely the abdominal cavity was distended by the internal decomposition.

It formerly travelled the country, curiously mounted in three caravans, the first containing the head, the second the thorax,

and the third the middle of the tail; when placed one after the other so as to exhibit the parts of the skeleton in their proper situation, the ends of the caravans were removed, and the cervical vertebræ, the lumbar vertebræ, and the caudal vertebræ were suspended in their proper situation between or beyond the caravans. The proprietor had placed a blade of Greenland whalebone (*Balæna mysticetus*) on one side and several of South Sea whalebone (*Balæna australis*) on the other side of the upper jaw, in the place of the true baleen of *Balænoptera*.

There is a nearly perfect skeleton of this species (which I have lately visited in company with Professor Eschricht) exhibited at Black-gang Chine, the Isle of Wight, which was caught in April 1842, near the Needles. It was, when first found, dark grey above and whitish beneath.

The baleen is slate-coloured with white streaks on the near or inner side; nearly black and with a few darker streaks near the outer or straight side. It was 75 feet long. The skull is 16 feet 7 inches long, 5 feet wide at the notch, and the edge of the beak from the notch is 12 feet long. The lower jaw 16 feet 9 inches; the upper arm-bone 2 feet, and the larger fore-arm-bone is 33 inches long. In this skeleton, the scapula and the chest-bones are wrongly placed, and the bones of the carpus and finger; and the lower processes of the vertebræ, as well as some of the smaller parts of the head, are deficient. There are 7 cervical vertebræ; the first, very broad, with a very large lateral process, on each side pierced with a hole near the body; the second is higher than it; and the three following have a ring-like or pierced lateral process, which Professor Eschricht regards as one of the best characters of the species. There are 14 thoracic vertebræ. The ribs are long; the first simple, shortish and broadish, the rest almost of equal size and length, the last being very nearly as long as the others. The lumbar vertebræ are 15, with considerably thicker bodies than the others. Caudal vertebræ 18, exclusive of those contained in the fin of the tail, which is preserved entire.

Professor Eschricht has two heads of this species at Copenhagen from Greenland. There is a head and some vertebræ at Paris, and some vertebræ at Berlin, and the St. Cyprian specimen, which was at Lyons in 1835.

Dr. Knox, under the name of *Balæna maximus borealis*, Knox, *Cat. Prep. Whales*, p. 5, and *Edin. N. Phil. Journ.* 1833, 181, notices a specimen of a whale found off North Berwick which was 80 feet long, the head 23 feet, and the tail 20 feet wide from tip to tip. He describes it as having 13 dorsal and 43 lumbar, sacral and caudal vertebræ (*Edin. N. Phil. Journ.* 1834, 198).

The skeleton of this whale is now in the Zoological Gardens,



Edinburgh, and is figured in *Jardine's Naturalist's Library*, vi. t. 5.

The baleen is black? Cervical vertebræ separate. Second lateral process very large, third, fourth and fifth large, ringed, sixth very imperfect, upper process elongate, bent down, lower short, rather depressed, seventh upper process elongate, lower wanting. The third and fourth cervical thinnest and of nearly equal thickness, fifth rather thicker, sixth thicker still, seventh thickest, and the thoracic vertebræ becoming gradually thicker. Ribs 15·15, first narrower at the vertebral end, second, third and fourth dilated and produced on the inner side of the vertebral end, rest simple. Chest-bones in three series, first simple, second larger with processes, third cordate with the first pair of ribs on the hinder end. Vertebræ: 10 caudal, 15 with chevron, 17 lumbar, 15 thoracic, 7 cervical.

**\*\*** *The transverse apophyses of the cervical vertebræ short; of the third, fourth, fifth and sixth, separate at the ends. Rorqualus.*

## 2. PHYSALUS (RORQUALUS) BOOPS.

The transverse apophysis of the second cervical vertebra thick, short, converging, but separate at the end; of the other cervical vertebræ slender, rather longer, far apart. The upper apophysis of the sixth bent down, rather elongate; the lower one thicker, shorter, and bent up at the end.

*Physalus Rorqualus Boops, Gray, Proc. Zool. Soc. 1847, 91.*

*Balænoptera antiquorum junior?, Cat. Osteol. Spec. 142.*

Inhab. Coast of Wales.

*a.* Skeleton of animal taken on the coast of Wales, and towed into Liverpool in 1846.

The length is 38 feet; the head is 9 feet long; the vertebræ are 60 in number, and there are 15 pairs of simple ribs.

The cervical vertebræ are all separate, and nearly equally developed; the bodies of the cervical vertebræ are squarish oblong, about  $\frac{1}{3}$  broader than high; the spinal canal is oblong depressed, twice as wide as high; the second is twice as thick as the other, with two large, broad, lateral processes, scarcely as long as half the width of the vertebra, coming together at the end, but separate, and leaving an oblong hole between them. The third, fourth, fifth and sixth cervical vertebræ, each with superior and inferior narrow lateral processes, the upper one of the third being the narrowest, and gradually increasing in thickness to the sixth. The lower of the fourth rather the broadest, and of the sixth the thickest and most tapering at the end. The third, fourth, fifth,

sixth and seventh cervical vertebræ have only two rather short processes on each side, the upper process being the most slender, compressed, and bent down, and the lower ones conical, stronger, compressed. The processes of the third vertebra are the thinnest, and they gradually increase in thickness and strength to the seventh or last.

The specimen here described was mentioned in the papers of the day as a *Spermaceti Whale*!

### 3. *PHYSALUS (RORQUALUS) SIBBALDII*.

The transverse apophyses of the second cervical vertebra rather elongated, united, leaving only a small subcentral hole; of the other cervical vertebræ slender, shorter, and far apart; nearly straight, directed out laterally.

*Physalus Rorqualus Sibbaldii*, Gray, *Proc. Zool. Soc.* 1847, 92.  
Inhab. North Sea. Coast of Yorkshire.

In the Museum of the Hull Literary and Philosophical Society there is a very perfect skeleton of this species taken in the Humber, which is 50 feet long. It has 64 vertebræ, as follows: cervical, 7; thoracic, 16; lumbar and caudal, 41; and the arms or paddles are 6 feet 9 inches long. The ribs 16 pair, all simple. The baleen is black.

This specimen is said to have been eight years old, but on what authority I cannot learn.

I have to thank my friend Mr. Pearsall, the curator of the above museum, for his kindness in sending me detailed drawings, of the natural size, of the cervical vertebræ of this interesting species.

\*\*\* *Cervical vertebræ unknown.*

### 4. *PHYSALUS? FASCIATUS*. The PERUVIAN FINNER.

"Lower jaw scarcely longer than the upper; head and back ash-brown; belly whitish; tips of fins and a streak from the eye to the middle of the body white."—*Tschudi*.

*Balænoptera*, n.s., *Tschudi*, *Mammal. Consp. Peruana*, 13.  
*Balænoptera* *Tschudi*, *Reich. Cetac.* 33; *Wieg. Arch.* 1844, 255.  
Inhab. Coast of Peru.

### 5. *PHYSALUS? IWASI*. The JAPAN FINNER.

Black; side white-spotted; belly white.

*Balænoptera arctica*, *Schlegel*, *Faun. Japon.* 26.  
Inhab. Japan.

A species of this genus is known in Japan under the name of *Iwasi Kuzira*. It is very rare. One was cast ashore in 1760 at

Kii, which was about 25 feet long; black, belly whitish, sides white-spotted. They distinguish it from the other whales by the head being smaller, narrower, and more pointed, and the pectoral shorter. It was driven ashore by the *Sakanata* (grampus). No remains of this species were brought home by M. Siebold. Temminck (*Fauna Japonica*) regards it as identical with the Northern species. It is very desirable that the bones of the Japan and Northern specimens should be accurately compared. It may be observed, that several animals, the Mole and the Badger for example, were formerly said to be like the European species, but recent research has shown they are distinct, and they are now so allowed in the *Fauna Japonica*.

This genus also inhabits the Columbian shores. Lewis and Clarke mention the skeleton of a *Rorqual* found near the Columbia river, 105 feet long.—*Travels*, 422.

Chamisso, in his accounts of the wooden models of whales which were made by the Aleutians, of the species found in their seas, which he deposited in the Berlin Museum, and described and figured in the *N. Acta Nat. Cur.* xii. 212, figures three kinds of this genus, viz. *Abugulich*, t. 16. f. 2; *Mangidach*, t. 16. f. 3; and *Agamachtschich*, t. 18. f. 4, the *B. Agamachsich*, Pallas, *Z. Ross.* t. a.

#### 6. *PHYSALUS ANTARCTICUS*.

*Balænoptera antarctica*, Gray, *Zool. E. & T.* 51.

There has lately been imported from New Zealand a quantity of finner-fins or baleen which are all yellowish white; this doubtless indicates a different species.

#### 7. *PHYSALUS BRASILIENSIS*.

*Balænoptera Brasiliensis*, Gray, *Zool. E. & T.* 51; *Cat. Ost. Spec. App.* 142.

I have also received from Mr. Smith, specimens of what is called in trade *Bahia Finner*. This baleen is black, the fibres on the edge of the larger flakes are purplish brown, and of the smaller or terminal ones paler brown. They are 35 inches long by  $11\frac{1}{4}$  inches wide; and the smaller, 10 inches long, and 4 inches wide at the base. This is so different in appearance from the other baleen of this genus, that I propose to call it *Balænoptera Brasiliensis*.

a. Three plates of baleen, "Bahia Finner." Bahia.

\*\*\*\* "Male organs under the dorsal."

#### 8. *PHYSALUS? AUSTRALIS*. SOUTHERN FINNER.

*Balæna Quoyii*, Fischer, *Syn.* 526.

*B. rostrata australis*, Desmoulin, *Dict. Cl. H. N.* ii. 166.

*Balenoptera australis*, Gray, *Zool. E. & T.* 51.

*B. australis*, Southern Rorqual or Finback, Nunn, *Narrat. Favourite*, 183. fig.

Inhab. Falkland Islands, Quoy.

Desmoulin (*Dict. Class. H. Nat.* i. 164), under the name of *Balæna rostrata australis*, described a whale seen by M. Quoy on the shores of Falkland Islands, which he says was exactly like *B. Physalus*. It was 55 feet long, and the pectoral fin 6 feet 3 inches, that is, about  $\frac{1}{4}$  the entire length, the same as in *Balenoptera Physalus*; but he says the dorsal fin was over the male organ, a character which as far as I know is peculiar to the Hump-backed Whale (*Megaptera*), thus presenting a combination of characters, which, if correct, will not only prove it to be a distinct species, but one forming a section by itself.

Lesson (*Tab. Reg. Anim.* i. 202) gives the name of *Balenoptera australis* to the "Fin-back of the Whalers of the South Sea." It is most probably intended for this species, as Falkland Islands is given for the habitat; but it may be *Megapteron Poeskop*, or perhaps a confusion of both.

If reliance is to be placed on the wooden models made by the Aleutians, which have been described and figured by Chamisso, and many of them are not bad representations of known genera, there is a genus found at Kamtschatka which has not yet been described. It is called *Balæna Tschiekagluk* by Pallas, *Zool. Ross. Asiat.* i. 289; *Nov. Act. Nat. Cur.* 259. t. 19. f. 6. It has no dorsal fin, and a smooth belly and chest; the upper and lower part of the under portion of the body is slightly keeled, the head rounded, like *Balenoptera*, with the blower on the hinder part of the crown. The lower side of the tail and the pectoral are white.

## Fam. 2. CATODONTIDÆ. TOOTHED WHALES.

Head large. Upper jaw toothless; lower jaw with conical teeth fitting into cavities in the edge of the upper one. Blowers united together, with a lunate opening. Skull concave above in front, with a much-elevated frontal ridge behind and on the side of the blowers.

*Delphinia Catodonia* (pars), *Rafn. Anal. Nat.* 60, 1815.

*Cete Carnivora* (pars), *Lesson, N. Reg. Anim.* 201.

*Physeteresæ*, *Lesson, N. Reg. Anim.* 201.

*Zahnwale* (pars), *Oken, Lehrb. Naturg.* 672, 1815.

### SYNOPSIS OF THE GENERA.

1. CATODON. Dorsal hump rounded. Blowers on front of truncated head. Skull elongate.

2. **KOGIA.** Dorsal hump —? Blowers —? Skull short, broad.
3. **PHYSETER.** Dorsal fin falcate. Blower on back of forehead. Skull elongate.

### 1. CATODON. SPERMACEI WHALES.

Head truncated and rather compressed in front, with the blowers close together on the front of the upper edge, separated from the head by an indentation. Nose of skull elongate, broad, depressed. Lower jaw shorter than the upper one, very narrow, cylindrical in front, and united by a symphysis for nearly half their length. Back with a roundish tubercle in front, over the eyes, called the "bunch," and a rounded ridge of fat behind, highest in front over the genital organs, called the "hump," and continued in a ridge to the tail. No true dorsal fin. Pectoral broad, truncated. Teeth conical, often worn down. Males larger than the females.

The atlas is distinct; the other cervical vertebræ are soldered together.—*Duvernoy, l. c. i. 195.*

*Catodon, Artedi, Syst.; Lacep. Cet.; Rafn. Anal. Nat. 60, 1815; Oken, Lehrb. Nat. 678.*

*Physeter (Catodontes), Fischer, Syn. Mam. 517.*

*Physeter, sp., Linn.; Illiger, Prod. 143, 1811; Lesson, N. Reg. Anim. 201.*

*Physeter, Wagler, N. S. Amph. 33.*

*Physalus, Lacep. Cet. 219. t. 9, from Anderson, Cacholotte, t. 4.*

*Balænoptera (Physalus), Fischer, Syn. Mam. 519.*

? *Notaphrum, Rafn. Anal. Nat. 60, 1815 (no char. nor type).*

*Cetus (pars), Oken, Lehrb. Naturg. 674.*

The teeth in the lower jaw (in young specimens 16 feet long) had not yet come through.—*Jackson, l. c. 140.* Capt. Benjamin Chase states that he has more than once seen teeth of a considerable size in the upper jaw of the adult females, though always covered by the gum. The males, he says, being much larger, are cut up differently, and in such a way as not to expose the teeth.—*Jackson, Boston Mag. N. H. v. 140.*

The upper jaw is not altogether toothless, as usually described. It has on either side a short row of teeth, which for the most part are placed more interior than the depressions which receive the teeth of the lower jaw, though they sometimes also occupy the bottom of these cavities. Their entire length is 3 inches; they are curved backwards and elevated about half an inch above the soft parts, in which they are deeply imbedded, having only a slight attachment to the maxillary bone. In two instances I have found

their number to be 8 on each side. They exist in both sexes of the Sperm Whale; and although visible externally only in the adult, they may be seen in the young animal upon removing the soft parts from the interior of the jaw.—*Bennett, Whaling Voyage*, ii. 163.

There is little external appearance, beyond the size of the individual or the development of its teeth, to distinguish the male from the female. Whalers are inclined to believe that the convex or "hatchet-shaped" snout is characteristic of the male Cachalots, but I do not think that there is sufficient ground for this conclusion.—*Bennett, l. c.* 167.

Sperm whales are infested with small lice (*Larunda Ceti*) and species of barnacles (as *Otton Cuvieri*), which usually adhere in clusters to the integument around the jaws. See *Bennett, l. c.* 169; *Beale, Hist. Sperm W.*

The ordinary food is the cuttle-fish or squid (*Sepia*), many kinds of which are rejected from the stomach of the whale when the latter is attacked by the boats. It is probable they occasionally indulge in other food. In 1835 a School whale rejected from her stomach a bony fish more than a foot long. Some whalers assert that they have seen Cachalots throw up rock-cod, and even sharks.—*Bennett, l. c.* 176.

The habitat of the Sperm Whale is more peculiarly the central and fathomless water of the ocean, or the vicinity of the most abrupt coast. The geographical range of the species (genus?) must be regarded as very extensive, since no part of the aqueous globe, excepting the Polar seas, would appear to be altogether inimical to their habits or free from their visits. It is however in the warmer seas, within or upon the verge of the tropics, that the Cachalot is sought with the greatest success, as in those corresponding to the intertropical coasts of Africa, America, Asia and New Holland, or surrounding the Indian and Polynesian islands, but more especially and uniformly in the "line of currents" which extend from the equator to almost the seventh degree of north and south latitude, both in the western and eastern hemispheres.—*Bennett, l. c.* 182, with map, showing where they occurred during his voyage. They were observed in the Antarctic Seas as high as lat.  $71^{\circ} 50'$ .—*Ross, Antarctic Voyage*, i. 169, 197.

Capt. Chase states,—They couple in a horizontal position and not upon the side; nor does the female remain supine, but being close to the surface of the water they occasionally turn, so as alternately to bring the top of the head above the water, evidently for the purpose of breathing. The Right Whale breeds at particular seasons, but the Sperm Whale at any season of the year. He has never seen more than a single young one at a time about the old female. Has seen a bucketful of thick rich milk dis-

charged from the mammary gland of a female when cut up, but has never witnessed the young in the act of suckling.—*Jackson, Boston Journ. N. H.* v. 141. He figures the stomach as having three cavities.—*Jackson, l. c.* t. 14.

Clusius erroneously describes the blowers as placed on the head near the back, and Artedi and Linnæus adopt this error in their character of *Physeter macrocephalus*. Anderson (*Iceland*, ii. 186. t. 4) gives a figure of a whale with a truncated head, much resembling the old figures of the Sperm Whale, with the blower on the hinder part of the head, like a *Physeter*. Bonnaterre established on this figure his *Physeter cylindrus*; and Lacepède forms a genus for it, which he calls *Physalus*. The Dutch engraving of the animal described by Clusius shows this to have been a mistake.

The bunch and hump referred to by Beale and the other whalers, appear first to have been described by T. Hasæus of Bremen, in 1723, in a dissertation on the 'Leviathan of Job and the Whale of Jonas;' on "a specimen 70 feet long, with a very large head, the lower jaw 16 feet long, with 52 pointed teeth, with a boss on the back, and another near the tail, which resembles a fin." Cuvier, after quoting this very accurate description, observes, "Mais d'après l'observation fait sur divers dauphins, cette disposition que personne n'a revue pourroit avoir été accidentelle, et alors cet animal n'auroit diffère en rien du Cachalot vulgaire."—*Oss. Foss.* v. 331. Indeed Cuvier's mind appears to have been made up that the Sperm Whale had no hump in the place of the dorsal fin, and he wrongly accuses Bonnaterre of having added a tubercle in his copy of Anderson's figure, which is not in the original (*Oss. Foss.* 332). Anderson, in the description of this animal, says that it has a prominence four feet long and a foot and a half high near its tail, as in his figure. But the fact was that Cuvier erroneously combined the Sperm Whale and the Black-fish (*Physeter*) together; and he could not otherwise reconcile how some authors, as Hasæus, Anderson and Pennant, described the Sperm Whale with a hump; while Sibbald describes the *Physeter*, which Cuvier erroneously considered the same animal, with a dorsal fin, overlooking at the same time the great difference in the form of the head, and in the position of the blower of these two very dissimilar genera.—*Oss. Foss.* 338.

Mr. Bell observes,—“After careful examination of the various accounts which have from time to time been given of whales belonging to this family, called *Spermaceti Whales*, I have found it necessary to adopt an opinion in some measure at variance with those of most previous writers, with regard to the genera and species to which all those accounts and details are to be referred. The conclusion to which I have been led is, first, that the *High-*

*finned Cachalot* is specifically but not generically distinct from the common one, and that therefore the genus *Catodon* is to be abolished, and the name *Physeter* retained for both species; and secondly, that all the other species which have been distinguished by various naturalists, have been founded upon trifling variations, or upon vague and insufficient data."—*Brit. Quad.* 507. Thus, though Mr. Bell differs from Cuvier in regarding them as distinct species, yet he overlooked Sibbald's figures, for he says there is no figure of the High-finned Cachalot in existence, and keeps it in the genus *Physeter*, which he characterizes as having the "Head enormously large, truncated in front," which is quite unlike the depressed rounded head of the High-finned Cachalot; and he also adopts the mistaken description of the dorsal fin.

Dr. Jackson observes—"The dorsal fin or hump forms a very obtuse angle, and is ill-defined, being (in a space 16 feet long) about 10 inches in length and 2 or 3 inches high;" there being, he further remarks, "also between it and the caudal two or three quite small finlets."—*Boston, Journ. N. H.* v. 137. These latter are, perhaps, what are represented as humps in Quoy's figure of *C. polycyphus*.

The figure of the *Sperm Whale* in *Duhamel, Pes.* iv. t. 15. f. 3, is good for the form and blower, and has the "taquet" marked; but a fin has been added below, between the vent and tail, in the position of the anal fins of fishes! in t. 9. f. 1. This author has figured and described *Orca gladiator* for the sperm whale!

Bonnaterre's figure (*E.M.* t. 7. f. 2) of the *Grand Cachalot* taken at Andiene, 1784, and copied by *Lacepède*, t. 10. f. 1, is not so bad for form, but has a fin instead of a hump on the back.

The figure of the *Spermaceti Whale* from the coast of Kent, 1794, in the *Gent. Mag.* t. 1, is very inaccurate, especially respecting the tail.

It is to be remarked that all the older writers only describe this animal as occurring in the Northern seas, and Robertson and Fabricius described it as black when young, becoming whitish below.

All the figures, except Anderson's, are, by the unanimous experience of the whalers, far too long for the thickness; and Anderson's scarcely represents the "bunch" sufficiently prominent, besides having the blower on the wrong part of the head.

Beale (*Nat. Hist. of the Sperm Whale*) says, there is but one species found in the North Sea, North America, New Guinea, Japan or Peru; but this is merely speaking the language of whalers, and by *species* he means, as he does in the other parts of his book, *genus*. I have no doubt, from analogy of other whales, that when we shall have had the opportunity of accurately comparing the bones and the various proportions of the parts of the



Northern and Southern kinds, we shall find them distinct. Wishing to call attention to this subject for future examination, I may observe that Beale (*N. H. Sperm Whale*, 22. f. 1, 14) describes the Southern Sperm Whale as grey. Female one-fifth the size and bulk of the males, more slender and large in proportion. Young black, skin thicker. Varies sometimes black and grey mottled.

Quoy gives an engraving of a drawing of a Sperm Whale, which was given him by an English captain, which is probably the Southern Whale. He calls it *Physeter polycyphus* (and Desmoulin renames it *P. australis*), because its back appears to be broken into a series of humps by cross ridges. In this particular it agrees with the Scrag Whale of Dudley (on which Bonnaterre established his *B. gibbosa*); but it cannot be that animal, as Dudley says it is a Whalebone Whale. Quoy's figure differs from Beale's in being much longer, but, as Beale observes, when speaking of the figures of the Northern kind, this is the common fault of all the drawings of the Sperm Whales.

Beale (*Hist. Sperm. Whale*, 8vo, 1839) and Bennett (*Narrat. Whaling Voyage*, 1840, 8vo, ii. 153) give a long account of the habits, the mode of catching, &c. of the South Sea Sperm Whale.

Colnet, in his *Voyage*, p. 80. f. 9 (copied by Brandt and Ratzeburg, t. 14. f. 3) gives a very good figure of a Sperm Whale, 15 feet long, from measurements; with details of the manner of flenching or peeling it. It agrees with Beale's in proportions. It was caught in the North Pacific, near Point Angles, on the coast of Mexico. This figure escaped Cuvier's researches.

Purchas says the Sperm Whale is found at Bermuda, where it is called *Trumpo*, a name which Lacepède applied to the northern animal. An anonymous writer in the *Phil. Trans.* i. 132, and Dudley, describe them as found on the east coast of North America.

The Japanese distinguish three varieties of this animal, according to their size. They live in herds on the Japanese coast.—*Faun. Japon.*

Owing to the great projection of the snout beyond the lower jaw, it may be requisite for this whale to turn on its side or back to seize its more bulky prey. When the animal attacks a boat with its mouth it invariably assumes a reversed posture, carrying the lower jaw above the object it is attempting to bite.—*Bennett*, l. c. 176; see also *Beale, Hist. Sperm Whale*, 159, and fig. at 154.

# 1. CATODON MACROCEPHALUS. NORTHERN SPERM WHALE.

Black, becoming whitish below.

*Trumpo, Phil. Trans.* i. 132.

*Physeter Trumpo, Bonnat. Cet.* 14. t. 8; *Fischer, Syn. Mam.* 518.

- Catodon trumpo*, *Gerard, Dict. Sci. Nat.* vi. 57; *Lacep. Cet.* 212. t. 10. f. 2.
- De Balæna macrocephala quæ binas tantum pinnas laterales habet*, *Sibbald, Phal.* 12.
- Balæna major in inferiore tantum maxilla dentata macrocephala bipinnis*, *Rasi Pisc.* 15.
- Cetus bipinnis supra niger*, &c., *Brisson, Cete*, 357.
- Catodon fistula in cervice*, *Arted. Syn.*
- Catodon macrocephalus*, *Lacep. Cet.* t. 10. f. 1.
- Sperm Whale, *Anderson, Cambridge Phil. Trans.* ii. 250; *Jackson, Boston Journ. N. H.* v. 137. t. 14, stomach.
- Spermaceti Whale, *Dudley, Phil. Trans.* xxxii. 258; *Gent. Mag.* 1794, 33. t. 1.
- Blunt-head Cachalot, *Robertson, Phil. Trans.* lx. t.
- Physeter *Catodon*, *O. Fab.* 44, and *Robertson*, not *Linn.*
- Ph. Trumpo, *Bonnat. Cetac.* t. 8. f. 1, from *Robertson*, copied *Reichenb. Cetac.* t. 4. f. 12; *Anat.* t. 10.
- Physeter macrocephalus, *Linn. S. N.* i. 107; *O. Fab. F. Græn.* 41; *Shaw, Zool.* ii. 497. t. 228; *Reichenb. Cetac.* 4. t. 4. f. 11.
- Cetus macrocephalus*, *Oken. Lehrb. Nat.* 675.
- Physeter gibbus, *Schreb.* t. 338; *Johnston, Pisc.* 215. t. 41. f. 1, 2, *Supp.* t. 42, copied *Brandt & Ratz. Med. Zool.* t. 12. f. 20; *Willoughb. Ichth.* t. A 1. f. 3.
- Inhab. North Sea. Teignmouth, *Gesner*, 1532. Whitstable Bay, 1794. Scotland, *Sibbald, Robertson*. Greenland, *O. Fab. &c.* New England, nine months of the year, *Phil. Trans.* i. 132, *Dudley*.

a. Skull. North Sea.

Length, entire .....	179 inches.
Length of beak .....	127 "
Width at notch .....	67 "
Width at middle of beak .....	52 "

The beak is not quite twice the length of the breadth at the notch, and more than  $\frac{2}{3}$  the length of the entire head.

This specimen is figured, *Cuv. Oss. Foss.* v. 6. 24. fig. 1-5.

b. Lower jaw. Indian Seas. Presented by Col. Cobb.

c. Lower jaw of young.

d. Lower jaw bent and distorted in front.

	b. in.	c. in.	d. in.
Entire length .....	157	92	51
Length of teeth-groove ..	...	...	29
Length of symphysis ....	85	44	21 $\frac{1}{2}$
Teeth on each side .....	23	21	19
Width at condyle .....	...	...	31

The lower jaw appears to increase in length in front, for in the older specimens the symphysis is more, and in the younger ones less, than half the entire length of the jaw.

*e.* Ear bones. Presented by H. H. Russell, Esq.

*f, g.* Teeth, various.

*h.* Section of a tooth.

There is the skull of a very young specimen, probably a fœtus of this animal, in the Museum of the College of Surgeons: the bones are of a very soft structure. The following are its measurements :—

Length, entire .....	32 inches.
Length of nose .....	20 "
Length of lower jaw .....	28 "
Length of symphysis .....	9·6 "
Width at notch of nose .....	12·6 "
Width of condyles apart .....	16·6 "

Camper (*Cetac.* t. 17, 20-22, from the church of Scherclinge, t. 18, 19, 27, *Mus. Paris*) figured the skull of this whale. He represents the nose of the skull as nearly twice and a half as long as the width at the notch.

The following table exhibits the measurements of the lower jaw of 9 specimens, all taken on the coast east of America.

No.	Length, entire.		From back teeth to articular surface.		Number of teeth.
	ft.	in.	ft.	in.	
1.	16	3	5	6	25·24, New Bedford.
2.	15	7	5	6	25·27
3.	8	5	3	9	20 — (none).
4.	7	10	3	2	26·23
5.	5	8	.....		23? 23? all pointed.
6.	5	3	2	9	25·24
7.	15	0	4	9	26·25
8.	7	6	3	2	24·24
9.	8	2	3	8	23

*Jackson, Boston Journ. N. H.* v. 153.

The young is quite black; remarkably smooth and elastic, like India rubber; from a line with the anterior extremity of the head to the top of the tail, 16 feet; to the rudimentary dorsal fin, 9 feet; to the anterior fin, about 4 feet; to the vent, 10 feet 2 inches; to the eyes, 3 feet 2 inches; to the external orifice of ears (which was about the size of a goose-quill), 3 feet 8 inches; to the angle of the mouth, 2 feet 10 inches; vertical diameter of the head, just in front of the opening of the mouth, 2 feet 10 inches;

of the largest part of the body, 3 feet; anterior fin 18 inches long and 9 inches wide. The dorsal fin or hump forms a very obtuse angle, and is ill-defined, being about 10 inches in length and 2 or 3 inches in height; *there being also between it and the caudal two or three quite small finlets.* Span of tail 1 foot 7 inches, and 4 inches wide midway. Lower jaw to angle of mouth, 1 foot 8 inches; right eye,  $1\frac{1}{4}$  inch long. Circumference of the body, 9 feet.—*Jackson, Boston Journ. N. H.* v. 139.

Twelve males were caught at Walderwich, Suffolk, Feb. 1788. The largest was 62 feet long, and the lower jaw 14 feet.—*Phil. Trans.*

There is a skeleton of an adult at Burton-Constable Castle, near Hull, Yorkshire. Described by *Beale*, 77.

## 2. CATODON COLNETI. MEXICAN SPERM WHALE.

Sperm Whale, *Colnet, Voyage*, 80. f. 9; *Beale, N. H. Sperm Whale*, 22. f. 1-14.

*Physeter macrocephalus*, *Brandt & Ratzeburg, Med. Zool.* t. 14. f. 3, from *Colnet*.

Spermaceti Whale, *Nunn, Narrat. Favourite*, 40, 58 (*fig. not good*), 175; *Fauna Japonica*?

Inhab. North Pacific. Japan. South Seas, *Nunn*. "Equatorial oceans," *Lesson*.

## 3. CATODON POLYCYPHUS. SOUTH SEA SPERM WHALE.

*Physeter polycyphus*, *Quoy & Gaim. Zool. Uran. Mam.* t. 12, cop. *Richb. Cetac.* 5. t. 5. f. 13.

*Physeter australis asiaticus*, *Desmoulin, Dict. Class. H. N.* ii. 618; *Fischer, Syn.* 518, from *Quoy*.

*Catodon polycyphus*, *Lesson, Mamm.* 422.

Cachalot, or Sperm Whale, *Bennett, Whaling Voyage*, ii. 153, fig. Inhab. Molucca.

The number of the teeth varies greatly in different individuals, and does not appear to be influenced by either age, sex, or size. Amongst many Cachalots, I find their variations in number to be as follows:—21 on one side of the jaw, 20 on the opposite; 23-21, 22-22, 24-25, 22-23, 24-26, 23-24, 22-24, 19-20. Length of males, 60 to 76 feet; of female, 30 to 35 feet. Foetus, 14 feet long and 6 feet in girth.—*Bennett, l. c.* 154.

M. de Blainville described what he considered as two varieties, observed in the lower jaws:—the first, from Cape Horn, has long, slender, cylindrical, rather acute teeth, and the symphysis to the 20th tooth; figured *Cuv. Oss. Foss.* v. t. 24. f. 8; the second with 25 or 27 blunt and vertical teeth on each side; the symphysis to the 18th tooth.—*Ann. Anat. & Phys.* ii. 335, 336.

## 2. KOGIA. SHORT-HEADED WHALES.

Head moderate, broad, triangular. Lower jaw wide behind, slender, united by a short symphysis in front. Jaw-bone of skull broad, triangular, as broad as long.

This genus is intermediate between *Catodon* and *Delphinus*.

The skull is quite distinct from the skull of the young Sperm Whale. The entire animal has not been observed.

*Physeter*, sp. *Blainv. Ann. Anat. et Phys.* iii.; *Lesson, N. Reg. Anim.* 201.

*Kogia*, *Gray, Zool. Erebus & Terror*, 22.

## 1. KOGIA BREVICEPS. The SHORT-HEADED WHALE.

Skull very broad and high, the frontal crest very distinct, and the nasal pit very deep, rather like that of the Cachalot. Nose very short and pointed, very rapidly tapering, only 1 inch longer than the breadth of the occipital bone. The lower jaw is very wide apart at the condyles, bent sharply inwards, and united in front by a moderate symphysis, and very narrow but rounded at the end. Teeth 14 or 15, narrow, slender, conical, acute, and rather arched inwardly.

*Physeter breviceps*, *Blainv. Ann. Anat. et Phys.* iii. 1838, 337. t. 15; *Lesson, N. Reg. Anim.* 201.

*Kogia breviceps*, *Gray, Zool. Erebus & Terror*, 22.

Inhab. Cape of Good Hope, *Mus. Paris*.

Described from a single skull in the Paris Museum. Length of the skull 14 inches 6 lines. Lower jaw 13 inches, separation at the condyles 12 inches, symphysis about  $\frac{2}{3}$  of the length of the lower jaw. Beak the length of the width at the notch.

## 3. PHYSETER.

"Head rounded, convex above; upper jaw longest; the blowers on the middle of the top of the head, separate, covered with one flap; pectoral fin moderate, triangular; dorsal fin high, falcate; teeth conical, compressed; the male organ under the front edge of the dorsal, and the vent nearly under its hinder edge."—*Sibbald*.

*Physeter*, sp. *Linn.*; *Artedi*; *Illiger, Prod.* 143, 1811.

*Physeter*, *Rafin. Anal. Nat.* 1815, 60.

*Tursio*, *Fleming, Phil. Zool.* 211, 1822 (*P. microps*).

*Cetus* (*Ruckenfinne*), *Oken, Lehrb. Nat.* 676.

? *Orthodon*, *Rafin. Anal. Nat.* 60, 1815 (no char. nor type).

*Physeteres*, *Lacep.*; *F. Cuv. D. S. N.* lix. 318.

According to Sibbald they produce spermaceti. Cuvier, in his 'History and Examination of the Synonyma of the Cachalots or Sperm Whales' (*Oss. Foss.* v. 328, 338), regards the description of this animal given by Sibbald as merely a redescription of the Sperm Whale, and finds great fault with Artedi, Bonnaterre, and others, for having considered them as separate; and he regards the second blunt-toothed specimen as either a *Delphinus globiceps* or a *D. Tursio* which had lost its upper teeth; this error is important, as it vitiates many of his subsequent observations. To have come to these conclusions he must have overlooked Sibbald's figure and ample details of the first, and the figure of the teeth of the second, or they would have at once shown him his error. That he did so is certain; for when he comes to Schreber's reduced copy of Sibbald's figures of *Balæna microcephala* (p. 337), he says Schreber does not indicate its origin; but on this copy of Sibbald's figure, which he before regarded as a Sperm Whale, he observes, that "from the form of its lower jaw it most resembles a large dolphin which had lost its upper teeth."

Thus, while Cuvier was reducing the numerous species of Sperm Whales that had been made by Bonnaterre, Lacepède, and other compiling French authors, to a single species, he has inadvertently confounded with it the very distinct genus of Black-fish, or *Physeter* of Artedi, which has a very differently formed head, the top of the head being flattened, and with the blowers on the hinder part of its crown, and with a distinct dorsal fin, particulars all well described by Sibbald, a most accurate observer and conscientious recorder, and not badly represented by Bayer.

Some parts of Sibbald's description, and his reference to Johnston's figure, might lead to this error; but his figures, which exactly agree in proportion with his description, though not referred to in the text, at once set this at rest, the drawing being  $\frac{7}{8}$  of the natural size, that is to say, 6 feet to an inch; and he observes that his animal is longer and more slender than Willoughby's figure of the Sperm Whale.

Sibbald describes the comparatively small triangular dorsal to be erect, like a "Mizam mast," which Artedi and Linnæus translate *pinna altissima*, and cause Shaw to call it the High-finned Cachalot. Dr. Fleming by mistake calls this species the Spermaceti Whale (*Brit. A.* 38); and he refers to *P. macrocephalus* (Linn.) as the true Sperm Whale figured by Robertson. Sibbald, in speaking of another specimen, says, "*spinam dorso longam*," as correctly quoted by Artedi and Linnæus, but used by them in opposition to the *altissima* of their other species.

J. Bayer (*Act. Nat. Cur.* 1733, 111. l. t. 1) gives a rather fanciful but very recognizable figure of a male specimen of this

genus, which was thrown ashore at Nice, on the 10th of Nov. 1736, where it is called *Mular*. He compared it with Clusius' description of the *Sperm Whale* which was stranded on the coast of Holland, and observes that it has a dorsal fin, very small pectorals, and other characters not noticed by Clusius; and he says it agrees in all points with the whale noticed by Ray (*Syn. Pisc.* 14), which is extracted from Sibbald as above quoted.

F. Cuvier, overlooking the reference to Clusius and Ray, and the characters, speaks thus of Bayer's figure, "Elle est en effet d'un Cachalot; mais elle le rend de la manière la moins fidèle." —*Cetac.* 267.

Duhamel (*Peck.* iv. t. 9. f. 2) figured a whale from the "River Gabon" in Guinea, with teeth in the lower jaw, a dorsal on the hinder part of the back, and the blowers in the crown, as in this genus; but the jaws are equal, and the mouth bent up at the angles to the eyes. He says it is called *Grampus* by the English.

There is an etching of Van den Veld, of a "Pot Walweak op Noortwijk op Zee, 28 Dec. 1614," which I think represents this species.

Beale (*History of Sperm Whale*, 11) observes, "Others of the Whale tribe have dorsal fins while they possess the cylindrical jaw (like the Sperm Whale), as the *Black-fish*, but yet spout from the forehead or top of the head, and do not produce spermaceti." It is doubtful if this is not derived from Sibbald, for it can scarcely refer to the *Globiocephalus macrorhynchus*, which according to Bennett, Nunn and others, is called the *Black-fish* by South Sea whalers.

I formerly thought that the *Aidluik* of O. Fabricius was identical with the *Balæna microcephala* of Sibbald, but Professor Eschricht observes, that it is most important, in the determination of O. Fabricius' synonyma, to attend to the Greenlanders' names, as they are most accurate *cetologists*; he observes (on the authority of Capt. Holbroll), "that two of the animals which Fabricius referred to *Physeter*, viz. 1st, the 'Pernak,' which he called *P. Catodon*, is probably, and 2nd, the 'Aidluik,' called by him *P. microps* (which Cuvier has thought might be *D. globiceps*), is certainly, the Northern Sword-fish, *Delphinus Orca*." —*Kong. Danske Afhandl.* xi. 136.

Fabricius' description of the 'Aidluik' will do for *Orca gladiator*; except that he calls it black, and does not mention the very remarkable white marks of that species, and he only described the lower jaw as toothed. Now the upper teeth of *Orca* are not deciduous. It is more probably a *Grampus*. As far as I can translate the Danish, it appears that the *Black-fish* or *Balæna microcephala* of Sibbald, which I thought might be *Aidluik*, has entirely escaped the notice of Professor Eschricht.

1. *PHYSETER TURSIUS*. The BLACK-FISH.

Black. Teeth 11 to 22 on each side, conical, compressed; head nearly  $\frac{1}{4}$ , pectoral fin  $\frac{1}{15}$  the entire length; the length 50–60 feet.

1. De *Balæna macrocephala* quæ tertiam in dorso pinnam sive spinam habet et dentes in maxilla inferiores arcuatos falciformes.—*Sibbald, Phal. t. 1. f. A, B, C*; hence *Balæna* major inferiore tantum maxilla dentata dentibus arcuatis falciformibus pinnam s. spinam in dorso habet.—*Raii Pisces*, 15.

*Cetus tripinnis* dentibus arcuatis falciformibus, *Brisson, R. A.* 229.

*Physeter microps*, *Artedi, Syn.*; *Linn. S. N. i.* 107; *Schreber, Saugh. t.* 339; *Anderson, Iceland*, 248, fig. from *Sibbald*.

*Physeter macrocephalus*, *Cuvier, Oss. Foss. v.* 331, 334.

*Tursio microps*, *Fleming, Phil. Zool.* 211.

2. *Balæna macrocephala tripinna* quæ in mandibula inferiore dentes habet minus inflexos et in planum desinentes.—*Sibbald, Phal. t. 2. f. 1, 2, 4, 5, teeth*; *Raii Pisc.* 16.

*Cetus tripinnis* dentibus in planum desinentibus, *Brisson, R. A.* 230.

*Physeter Tursio*, *Artedi, Syn.*; *Linn. S. N. i.* 107.

*Delphinus globiceps*? or *D. Grampus*? *Cuv. Oss. Foss. v.* 331, 334.

3. *Mular, Bayer, Act. Nat. Cur.* 111. t. 1, male; hence

*Ph. Mular, Bonnat. Cet.* 17.

*Ph. Orthodon, Lacep. Cet.* 236, from *Anderson*, 246.

*Delphinus Bayeri, Risso, Eur. Merid. iii.*; *F. Cuv. Cetac.* 224, from *Bayer*.

Inhab. North Sea. Scotland, *Sibbald*. Nice, *Bayer*.

*Sibbald* observes that "the superior part of the body was swelled to a prodigious size. In length it was 52 or 53 feet, its height 12 feet, its girth above 32 feet. Its head was so large that it was (the tail being removed) half the length of the whole body. In form it was oblong-round, somewhat compressed at the upper part; inferior part of rostrum beyond lower jaw  $2\frac{1}{2}$  feet, the superior part nearly 5. Lower jaw 10 feet long. The extreme part of the rostrum was distant 12 feet from the eyes, which were very small for the size of the head, about the size of those of the haddock. A little above the middle of the rostrum is a lobe, which is called the 'lum,' with two entrances covered with one operculum, called the 'flap.' The size of the cranium may be estimated by the fact that four men were seen inside it at one time, extracting the brain, which contained several cells or al-



veoli, like those which bees keep their honey in, and in these were round masses of a white substance, which, upon examination, were proved to be sperm. Some of this substance was also found externally on the head, in some parts to the thickness of 2 feet. In the superior jaw were 42 alveoli, hollowed out for receiving the teeth of the lower jaw; they were of a cartilaginous nature. In the inferior mandible there were 42 teeth, 21 on each side, all of the same form, which was like that of a sickle, round and a little compressed, thicker and more arched in the middle, and gradually becoming thinner, terminating superiorly in an acute cone turning inwards; inferiorly it becomes thinner, and terminates in a more slender root, which is narrower in the middle. Of these teeth those in the middle of the jaw are larger and heavier, those external are smaller. One of the larger, 9 inches long, weighed 18½ oz., and at the thickest end was of the same length as breadth. The smallest tooth which I got was 7 inches long and 5 in girth. The osseous part of these teeth projected 3 inches beyond the gums, was like polished ivory, smooth and white; the fang of each tooth was provided with a large cavity, which was so constructed that in the larger teeth there was a cavity 3 inches deep. It had two lateral fins, each about 4 feet long, and besides these a long fin on the back. Colour of skin black. The throat was observed to be larger than usual in whales. Only one stomach was found."

The two individuals seen by Sibbald have been divided into two species, according to the more or less truncated state of the teeth.

In the Catalogue of the Museum of the College of Surgeons, the truncated Whale's-teeth are called "the teeth of the High-finned Cachalot, *P. Tursio*?" p. 171, n. 1189-1194. And the small jaws of the Sperm Whale are called "the Lesser Cachalot (*Physeter Catodon*, Linn.)."

See also *Physeter sulcatus* (Lacep. Mem. Mus. iv. 475), from a Japanese drawing, with the dorsal fin over the pectoral and the jaws grooved.

### Fam. 3. DELPHINIDÆ. DOLPHINS.

Head moderate. Teeth in both jaws, rarely rudimentary and early deciduous. Blowers united together, forming a single transverse or lunate opening on the crown of the head.

Diodonea and Delphinia (pars), Rafin. Anal. Nat. 1815, 60.

Cete, Carnivora, pars, Lesson, N. Reg. Anim. 197.

Hydraula, Ch. Bonap. Reg. Anim.

Delphinusidæ, Lesson, N. Reg. Anim. 197.

*Delphinus*, Linn.; *Illiger*, *Prod.* 143, 1811.

*Delphinus* and *Monodon*, Cuv. *Tab. Elem.* 1798.

*Delphinidæ*, Gray, *Ann. Phil.* 1828; *Spic. Zool.* i. 1828; *Cat. Mam. B.M.* 104; *Zool. Erebus & Terror*.

*Delphinidæ* and *Monodontidæ*, Gray, *L. Med. Rep.* xv. 310, 1821. *Cete*, pars, *Illiger*.

*Delphinidæ*, *Delphinina* and *Monodontina*, *Selys Longchamps*, 1842.

Les Cétacés piscivores et les Narwals, *F. Cuv. D. S. N.* 1829.

Zahnwale, pars, *Oken*, *Lehrb. Naturg.* 672, 1815.

This family is easily known from the Toothed Whales, or *Catodontidæ*, by the smaller and more proportionate head; and in those species which have lost their upper teeth at an early age, by there being no regular series of pits in the gum of the upper jaw for the reception of the teeth of the lower one; and also by the hinder part of the skull not being deeply concave, and surounded on the sides and behind by a high ridge.

These animals when first born are large compared with the size of the parents (according to Dr. Knox, the fœtus of the porpesse is half the length, that is, one-fourth the size of the parent before it is born (*Trans. Roy. Soc. Edin.* ii. 208); and they appear to attain their full size very rapidly, which may account for the very slight difference to be observed in the size of the skull, and the great uniformity in the number, and in the space which the series of teeth occupy upon the edge of the jaws in the different specimens of the same species. Hunter thought the exact number of teeth in any species was uncertain: observing the teeth in the middle of each series were the largest and the most firmly fixed, he states his belief that "the jaws increase posteriorly and decay at the symphysis, and while the growth is going on, there is a constant succession of new teeth, by which means the new-formed teeth are proportioned to the jaw."—*Phil. Trans.* 1788, 398. Dr. Fleming, from the examination of the jaws of two porpesses of different ages, thinks "the jaws lengthen at the symphysis and at the base;" and that "the new teeth formed at these places are the smallest, and that there is no absorption."—*Fleming, Phil. Zool.* ii. 208. This may be the case with the specimens before they arrive at their full size; but no skull of this kind has fallen under my observation: and as far as my experience will carry me, the numbers, size, and disposition of the teeth furnish the most important characters for the determination of the species and the definition of genera. M. F. Cuvier's remarks (*Cetac.* 103, 104) on the teeth as the characters of genera are not consistent with my observations, for they appear quite as characteristic of the different genera as those of other orders of Mam-

malia, though they do not present so many different forms. At the same time, it is true, that compilers like Lesson, who appear not to have examined a single skull, have made many genera, founded on very slight characters, and bring together species that have very little relation to each other.

For the purpose of more distinctly defining the species, it has been found necessary to divide them into several groups, so as to arrange them into what appears to be a more natural series, and circumscribe the genera.

#### SYNOPSIS OF THE SUBFAMILIES AND GENERA.

- A. *Jaws tapering, the symphysis of the lower jaw short, not half the length of the jaw. Dorsal fin generally distinct. Pectoral fin ovate acute. Marine.*
  - a. *Upper jaw toothless, lower jaw with only one or two teeth (which are often hidden in the gums) on each side. Beak of the skull keeled on each side, the keel being sometimes large, and forming a kind of reflexed wing on each side. Head with a short beak. Hyperoodontina.*
    1. **HYPEROODON.** The beak of the upper jaw with a large erect wing-like expansion in front of the blowers; lower jaw with two rudimentary teeth in front.
    2. **ZIPHIUS.** Beak of upper jaw keeled on each side; lower jaw broad, bent down in front, with large compressed teeth in the middle of each side.
    3. **DELPHINORHYNCHUS.** Beak of upper jaw keeled on each side; lower jaw nearly straight, with two or three small, rudimentary, conical teeth in the middle of each side.
  - b. *Upper and lower jaw with few or deciduous teeth. Wings of the maxillary bones expanded and shelving downwards. The beak short, deflexed. Forehead convex. Head rounded, without any beak. Monoceratina.*
    - \* *Lower jaw toothless.*
      4. **MONODON.** Upper jaw of males with one or two very long, projecting, spirally twisted tusks. Dorsal none.
    - \*\* *Upper and lower jaw with conical, early deciduous teeth.*
      5. **BELUGA.** Dorsal fin none.

- \*\*\* *Upper and lower jaw with compressed, permanent teeth.*
6. NEOMERIS. Dorsal none.
7. PHOCÆNA. Dorsal triangular, in the middle of the back.
- c. *Upper and lower jaw with many teeth, rarely deciduous with age. Wings of the jaw-bone horizontally produced over the orbits. Delphinina.*
- \* *Head rounded in front, not beaked. Nose of skull scarcely so long as the brain-cavity. Dorsal distinct.*
8. GRAMPUS. Teeth conical, truncated, early deciduous. Intermaxillaries broad. Pectoral ovate.
9. GLOBIOCEPHALUS. Teeth conical, deciduous when old. Intermaxillaries very broad. Pectorals narrow, linear.
10. ORCA. Teeth conical, acute, permanent. Intermaxillaries moderate. Pectorals ovate.
- \*\* *Head beaked. Nose of skull as long as or longer than the brain-cavity.*
11. LAGENORHYNCHUS. Head shelving in front. Dorsal rather posterior. Nose of skull depressed, expanded.
12. DELPHINAPTERUS. Head rather convex in front. Dorsal none. Nose of skull rather depressed, convex above.
13. DELPHINUS. Head rather convex in front. Dorsal medial. Nose of skull rather depressed, convex above.
14. STENO. Head rather convex in front. Dorsal medial. Nose of skull compressed, higher than broad. Symphysis of lower jaws rather elongate.
15. PONTOPORIA. Head rather convex in front. Dorsal medial. Nose of skull rather compressed: high symphysis of lower jaw very long.
- B. *Jaws much compressed. Symphysis of the lower jaw very long. Dorsal none. Teeth in both jaws. Fluviatile.*
- d. *Skull with the maxillary bones simple, expanded over the orbit. Teeth conical. Paddles ovate or oblong. Iniana.*
16. INIA. Teeth rugose, the hinder ones with a rounded tubercle on the inner side.

- e. Skull with the maxillary bones bent up in front of the blowers, and forming a vault. The teeth compressed. The paddles fan-shaped, truncated at the end. Platanistina.*

### 17. PLATANISTA.

My thanks are due to Dr. Richardson of Haslar, to Mr. Brightwell and the Committee of the Norwich Philosophical Society, and to Mr. Bell, for allowing me to have at the Museum for comparison the specimens of these animals in the collections under their care; and to Mr. Owen and the Council of the College of Surgeons, and the Council of the Zoological Society, for permission to examine the skulls of the different species of this family in their Museums.

- a. Jaws tapering, the symphysis of the lower jaw short, not half the length of the jaw. Dorsal fin generally distinct. Pectoral fin ovate acute. Marine.*
- a. Upper jaw toothless; lower jaw with only one or two teeth on each side, often hidden in the gums. Beak of skull keeled on each side, the keel being sometimes large, and forming an elevated reflexed wing on each side. Hyperoodontina.*

Hyperoodontina, Gray, *Zool. Ereb. & Terror*, 24, 25.

Diodonea, pars, Rafin. *Anal. Nat.* 60, 1815.

### 1. HYPEROODON.

Upper jaw toothless; lower jaw with a small, conical, acute, rudimentary, moveable tooth, in a cavity under the gums, on each side of the front part. Blowers linear, transverse, sub-lunate.

Hyperodon, Rafin. *Anal. Nat.* 60, 1815.

1. Uranodon, Illiger, *Prod.* 143, 1811.  
Nodus (sp.) edentulus, Wagler, *N. S. Amph.* 34.  
Orca, Wagler, *N. S. Amph.* 34.
2. Hypodon, Haldeman.  
Chenocetus, Eschricht, *Danish Trans.*  
Cetodiodon, Jacob, *Dublin Phil. Journ.*  
Diodon, Lesson, *Ouvr. Buffon*, i. 124.  
Anarnacus, Lacep.; Dumeril, *Z. A.*; Rafin. *Anal. Nat.* 61, 1815; Gray, *Zool. Ereb. & Terror*.  
Ancylocodon, Illiger, *Prod.* 142, 1811; Oken, *Lehrb. Naturg.* 673, 1815.

*Monodon (spurius)*, sp. O. Fab.

*Heterodon* (sp.), *Desmarest, Mam.*

*Delphinus* (sp.), *Desmarest, Mam.*

3. ? *Diodypus*, *Rafin. Anal. Nat.* 60, 1815 ; no type nor char.

Cervical vertebræ united, all anchylosed together. *Mus. Hull. Græves, Edin. Phil. Journ.* 1830, 59.

According to Voight and Wesmael, the ends of the blowers, as in other dolphins, point forward. Dale, Baussard and Doumet describe them as pointing backwards ; Desmarest and others assumed the latter as a generic character.

This genus is at once known from *Delphinorhynchus*, without examining the skull, by the head being more convex and rounded in front, and the two teeth being situated in the front end of the lower jaw, while in that genus they are in the middle of each side.

Lacépède called the genus *Hyperoodon*, and Illiger *Uramodon*, because of the teeth on the palate described by Baussard. They have not been observed on other specimens ; and Illiger, in his generic character, by mistake says the two teeth are in the upper jaw (*Gen.* 143) ; and Professor Eschricht, in his unpublished paper, has proposed the name of *Chenocetus*, instead of *Hyperoodon*, which is founded on an erroneous description, as the name *Goose-whale*, or its translation, is applied to this animal by the inhabitants of most part of the seas where it inhabits, and Dr. Jacob calls it *Cetodiodon*.

Professor Eschricht, in the *Danish Transactions*, has given an account of the history of the genus, and of its anatomy, including some admirable details of its brain. He also shows that there are numerous small teeth in the jaws (see fig. at pp. 331–335), besides the two large teeth in front.—*Danish Acad. Trans.* xi. 327, 331, 332, 334, 335.

O. Fabricius described a whale under the name of *Monodon spurius*, called by the Greenlanders *Anarnak*, as having two small, conical, slightly-curved, blunt teeth prominent in front of the upper jaw ; the lower jaw toothless. M. Cuvier (*Oss. Foss.*) regards it as a *Hyperoodon*, and he only believed in the existence of one species of the genus. M. F. Cuvier, who misunderstood the description of Chemnitz with respect to the teeth of *Balæna rostrata*, is inclined to unite it to that species, with which it agrees in being all black, but observes they differ greatly in size.—*F. Cuv. Cetac.* 226. It cannot be the young Narwhal, for the back is finned.

Professor Eschricht regards the *Anarnak* or *Monodon spurius*, O. Fab., as the common *Hyperoodon*, in which Fabricius mistook the lower for the upper jaw. The fat of *Hyperoodon* is purgative, as Fabricius describes to be the peculiarity of the *Anarnak*.

Lacepède (*Cetacea*, 164) described it as a genus under the name of *Anarnacus*, and Illiger (*Prod.* 142) under that of *Ancylodon*; and in the *Zoology of the Erebus and Terror*, on the strength of Fabricius's usual accuracy, I adopted the views of this naturalist; but Prof. Eschricht's observations have induced me to believe that Cuvier and other naturalists have been right in considering it as a synonym of *Hyperoodon*.

The error of Fabricius is very pardonable, as Desmarest and Lesson have mistaken the upper for the lower jaw, in Chemnitz's description (*Desm. Mam.* 520; *Lesson, Mam.* 427; *Cetac.* 120); and M. F. Cuvier has not well understood it, as pointed out by M. Wesmael (*l. c.*), and Illiger makes the same mistake with regard to his species.

*Physeter bidens* (Sowerby) has been referred to this genus, but the form of the head and position of the fins, the teeth, and the form of the skull, show it to be a *Ziphius*.

The descriptions of the species of this genus are so different, that I am inclined to keep them distinct, for the purpose of calling attention to them. Cuvier regarded them all as one.

† Crest of skull thin and far apart on the upper edge.

\* Dorsal fin in the centre of the back. *Hyperoodon*, Lacep.  
*Uranodon*, Illiger.

#### 1. HYPEROODON BUTZKOPF. The BOTTLE-HEAD.

Black, beneath lead-coloured; dorsal fin central; lower jaw with two pointed teeth in front, sunk in the gums; "palate with acute, hard points;" blowers transverse, lunate, with the convexity in front.

1. *Hyperoodon Butzkopf*, *Lacep. Cetac.* 319, from *Baussard, Journ. Phys.* xxxiv. 201. t. , copied *F. Cuv. Cetac.* 241. t. 17. f. 1. t. 11. f. 1, cop.; *Gray, Zool. Erebus & Terror*, 20. t. 3. f. 1, 2, animal, f. 4, 5, skull.

*Delphinus?* edentulus, *Schreb. Saugh.* t. 347.

*Nodus* (edentulus), *Wagler, N. S. Amph.* 34.

*D. Hyperoodon*, *Desm. Mam.* 521; *Fischer, Syn.* 515.

*D. Honfioriensis*, *Desm.*

*D. Butzkopf*, *Bonnat.* 25; *Desm. N. Dict.* ix. 176.

*Heterodon Hyperoodon*, *Lesson, Man.* 419.

2. Bottle-head, or Flounder's Head, *Dale, Hist. Harwich*, 411. t. 149, cop.

Beaked Whale, *Penn. Brit. Zool.* t.

3. *Monodon spurius* (Anarnak), *O. Fab. Faun. Græc.* 31; *Bonnat. Cetol.* 11; hence

*Delphinus anarnacus*, *Desm. Mam.* 520.

*D. ? spurius*, *Fischer, Syn.* 515.

*Anarnakus Groenlandicus*, *Lacep. Cet.* 164.

*Ancylodon (spurius)*, *Illiger, Prod.* 142.

*Heterodon anarnacum*, *Lesson, Man.* 418.

4. *Hyperoodon*, *Longchamps, Mém. Soc. Linn. Norm.* vii. 19. t. 1.  
Inhab. North Sea. Harwich, Dale.

	BAUSSARD.				DALE.	
	Adult.		Young.		Female.	Male.
	ft.	in.	ft.	in.	ft.	ft.
Length, entire .....	23	6	12	6	13	18
" of beak.....			0	5		
" to blower.....	4	4	1	11		
" of head.....		1		4		
" of pectoral ....	2	0	1	0		
" to dorsal fin....	13	6	7	8		
" of dorsal fin....	2	0	1	0		
" to vent .....			7	10		
Width of pectoral .....	1	3	7	0		
" of caudal .....	6	10	3	2		
Circumference .....	15	7	8	0		
" of head ..	8	7				
Height of dorsal .....	1	3	7	0		

*Heterodon Dalei* (Lesson) is not from Dale's description of this whale, but from Blainville's account of *Delphinorhynchus micropterus*.

Lacépède placed this species as the type of his *Hyperoodon*, and refers *Delphinus bidentatus* to *Delphinus*!

F. Cuvier considers Hunter's and Baussard's as incontestably the same species, taking no notice of the position of the dorsal (*Cetac.* 242). Dale does not mention the teeth, but they are only to be seen when the flesh is removed.

**\*\* Dorsal fin behind the middle of the back, triangular.**

## 2. HYPEROODON ROSTRATUM. The BEAKED HYPEROODON.

Blackish; pectoral nearly  $\frac{1}{2}$ , and dorsal  $\frac{1}{3}$  the length from the tip of the beak; blowers lunate, concave in front.

*Hyperoodon rostratum*, *Gray, Zool. Erebus & Terror*, 20. t. 3.

Var. 1. Black above and below. Vertebrae 46; 11 lumbar and 19 caudal. "Blowers concave towards the head, rather in front of the eye; palate smooth."—*Wesmael*.

*Hyperoodon rostratum*, *Wesmael, Acad. Brux.* 1840, xiii. t. 1, 2.



*Balæna rostrata*, Chemnitz, *Berlin, Besch.* iv. 183; hence *Delphinus Chemnitzianus*, *Blainv. in Desm. N. Dict.* ix. 175. *Heterodon Chemnitzianum*, Lesson, *Man.* 418. Inhab. North Sea.

Length, entire .....	6.70 metres.
„ to blowers .....	1.24 „
„ to eye .....	1.06 „
„ to point of dorsal .....	4.40 „
„ of pectoral .....	0.70 „
„ to vent. ....	5.17 „
Breadth of pectoral .....	1.40 „
„ of face .....	0.86 „
Circumference .....	3.76 „

Var. 2.? Blackish brown, beneath brownish white. Vertebrae 45; 12 lumbar and 17 caudal.—*F. Cuv.*

Bottle-nose Whale of Dale, *Hunter, Phil. Trans.* lxxvii. t. 19, cop. *Bonnat. Cetac.* t. 11. f. 3, and *Bell, Brit. Quad.* 292. f. *Delphinus Hunteri*, *Desm. Mam.* 520, from *Hunter*.

*D. diodon*, *Lacep. Cet.* 309. t. 13. f. 3; *Gerard, Dict. S. Nat.* vi. 78.

*D. bidentatus*, *Bonnat. Cet.* t. 11. f. 3; *Desm. N. Dict.* ix. 175, from *Hunter*.

*Hyperoodon*, *Cuv. Oss. Foss.* v. 321. t. 24. f. 19, 21, copied from *Camper*, t. 13.

B. à museau pointu, *Camper, Cetac.* 78. t. 13–16.

*Cetodiodon Hunteri*, *Jacob, Dublin Phil. Journ.* 1825, t.

*Hyperoodon*, *Thompson, Mag. N. Hist.* 1838, 221.

H. Butzkopf, *W. Thompson, Annals. & Mag. N. Hist.* 1846, 150. t. 4. iv. 375.

Inhab. North Sea. Thames, *Hunter*. Humber, *Thompson*.

Var. 3. Blackish grey, paler on the belly and round the eyes; upper part of lower jaw yellowish marbled. Teeth none; the edge of the lower jaw shuts into a corresponding groove in the upper jaw. Blowers lunate, with the concavity in front, exactly over the eye, 6 inches by 3.

*Hyperoodon*, “*Voight’s Mem.* t. ;” *F. Cuv. Cetac.* 245.

Inhab. North Sea, *Kiel*. Skull, *Kiel. Bot. Gard.*

	ft.	in.
Length, entire .....	20	6
„ of beak .....	1	9
„ to eye .....	4	2
„ from blower to dorsal ..	12	0

	ft.	in.
Length of dorsal .....	1	8
„ of pectoral .....	2	10
„ from dorsal to caudal ..	6	2
Breadth of beak .....	1	0
„ of pectoral.....	0	8
„ of tail.....	6	2
Height of dorsal .....	1	4
Circumference .....	13	0

The dorsal fin is said to be 12 feet from the blower, but that makes the body too long for the measurement.

a. Teeth. Liverpool.

The *skeleton* in the Museum of the College of Surgeons (probably Hunter's) has the skull about 45 inches long, and the elevated plates of the maxillary bone are thin, leaving a broad space between them, in front of the blowers, and they are as high as the frontal crest.

Mr. Pearson of the Hull Philosophical Society, Mr. Ball of Dublin, and Mr. W. Thompson of Belfast, have sent me various detailed drawings of the head of the *Hyperoodons* taken off the British and Irish coasts, in their possession; they (the skeleton at Liverpool, and the French skeleton which has lately been added to the Anatomical Museum of Paris) appear all to belong to one species, and to be the same as Hunter's specimens in the College of Surgeons, and the skull figured by Camper and Cuvier.

Mr. Thompson (*Mag. Nat. Hist.* 1838, 221) describes a specimen stranded near Hull in 1837; it has two strong, robust teeth at the extremity of the lower jaw, covered and entirely concealed by the gums. The skull corresponded in its general form with the figures in Cuvier; but the rise of the back part of the head is larger in proportion to the anterior rise than in that figure. The skull measures from the snout to the base of the front rise 9 inches; from thence across the rise to the base of the second rise 1 foot; from thence across the hinder rise to the neck 1 foot 11 inches. The length of the skeleton is 17 feet 6 inches; vertebrae 39; viz. 7 cervical, 9 dorsal, with ribs; 20 lumbar and 8 caudal. It is in the Museum of the Hull Philosophical Society. It agrees in all particulars with Hunter's specimen in the College of Surgeons. Mr. Thompson considers Hunter's and Baussard's cetacean as identical, and Dale's the male of the same species.

Mr. W. Thompson has given in the *Ann. & Mag. Nat. Hist.* 1846, 150. t. 4. iv. 375, the following description and measurement of a recently caught specimen; he calls it *H. Butzkopf*.

"Blackish lead hue, merely a lighter shade beneath, and not white. Teeth, two on each side, in front loosely covered by the gums; the front pair smaller; blower slightly crescentic, pointed

directly towards the head, and the eyes on the same vertical plane; eyes round; 'a male;' and the following measurements:—

	ft.	in.
" Length, entire, straight .....	20	4
" over curve .....	23	4
" of nose .....	0	11
" of gape .....	1	7
" to eye .....	3	1
" to pectoral fin ....	5	11
" of pectoral fin ....	2	2
" to dorsal fin .....	10	9
" of dorsal at base ..	1	7
Girth, greatest .....	11	6
Width of pectoral .....	0	7
" of caudal .....	5	6
Length of dorsal .....	1	0."

Dr. Jacob, in his description of *Cetodiodon Hunteri* (*Dublin Phil. Journ.* 1825), observes, that there are no teeth in the palate. He believes that the three skulls in Dublin, viz. of the skeleton in Mus. Coll. Surg. Dublin; a skull, Royal Dublin Society; and a skull in the Museum of the School of Anatomy, Peter's Street, Dublin,—belong to one species; they all have two teeth in the lower jaw, hid in the gums. In the *Zoology of the Erebus & Terror*, t. 3. fig. 4 & 5, is a representation of one of the skulls of this species in the Dublin Museum, from a drawing kindly communicated by R. Ball, Esq.

There is a skeleton of this species in the Museum of the Edinburgh University.

By the kindness of Mr. S. Stutchbury I have been enabled (in the *Zoology of the Erebus and Terror*, t. 3. f. 1, *animal*, f. 2, *tail*, f. 3, *blowers*) to give a new figure of this species, from a drawing made by Mr. W. H. Baily, of a specimen taken at Aust Passage, Oct. 1840. The measurements, on the drawing taken at the time, are as follows:—

	ft.	in.
Length, entire, along the back .....	22	2
" straight line .....	21	0
Girth on widest part .....	12	6
" of posterior part of fins .....	11	2
" over the eyes to centre of blow-hole ..	8	9
" at highest part of head .....	6	6
" at close of tail .....	2	11
Length of upper part of upper jaw .....	1	1
" of lower jaw .....	1	8
" of upper part of lower jaw .....	1	9

	ft.	in.
Length of lower jaw to eye .....	3	3
„ from tip of lower jaw to anterior part of flipper .....	5	3
„ of flipper .....	2	3
Width of flipper .....	0	8
Length from anterior part of flipper to vent	8	0
„ from end of tail to anterior part of dorsal fin .....	9	8
„ from end of tail to posterior part of dorsal fin .....	7	0
Breadth of dorsal fin .....	1	6
Length of dorsal fin .....	1	2
Breadth of tail .....	6	4
Depth of tail .....	1	8
Length of orifice of vent .....	1	8

The skeleton of this specimen is preserved in the Bristol Institution.

The skeleton in Mus. Roy. Institution, Liverpool, has the skull 60 inches long, 18 inches from top of crest to palate; the intermaxillaries are convex, and distinctly to be seen to the front of the blowers; orbital crest erect, scarcely as high as the process at the back of the blower; the nuchal vertebræ anchylosed, the three first into one mass, with a long conical lateral process; the dorsal process of the two hinder separate.

### 3. HYPEROODON DOUMETII. The CORSICAN HYPEROODON.

Jaws paved with acute tubercles; dorsal  $\frac{3}{4}$  the length from the tip of the jaws: blowers lunate, with the convexity in front.

Hyperoodon, *Doumet, Bul. Soc. Cuvier*. 1842, 207. t. 1. f. 2.  
Inhab. Corsica.

“Jaws toothless, but paved with small, long and acute tubercular granulations; lower jaw with two rather longish, acute, slightly arched and longitudinally grooved teeth in front; larynx with a kind of funnel at the base of the tongue, like the beak of a duck, or rather of a spoonbill,  $5\frac{1}{4}$  inches long; gape small; beak conical; eyes small, near middle of head; blowers lunate, with the points directed backwards; pectoral fin 19 inches long,  $6\frac{1}{4}$  wide; dorsal nearly 8 inches high,  $49\frac{1}{4}$  inches from the tail; the tail is broad, lobes equal.”—*Doumet*.

According to this description the dorsal fin of this species must be further back than in any other of the genus, and the pavement of the jaws is quite peculiar. It agrees with Dale and Baussard's descriptions in the form of the blower, but differs from them in the position of the dorsal.

\*\*\* *Dorsal fin posterior, oblong, truncated at the end? Jaws curved up.* Diodon, Lesson.

#### 4. HYPEROODON DESMARESTII. DESMAREST'S HYPEROODON.

*Delphinus Desmarestii*, Risso, *Europ. Merid.* iii. 24. t. 2. f. 3; *F. Cuv. Cetac.* 159.

*Le Diodon de Desmarest*, Lesson, *Cuv. Buff.* i. 124. t. 2. f. 2.

*Orca (Desmarestii)*, Wagler, *N. S. Amph.* 34.

Inhab. Nice: common, March and September.

"Steel-grey, with numerous, irregular, white streaks, beneath white; body thicker in the middle; tail slender, long, keeled, rounded on the belly; head not swollen, ending in a long nose; upper jaw shorter, toothless, lower much longer, bent up, and with two large conical teeth at the end; teeth nicked near the tip; the eyes small, oval; blowers large, semilunar; pectoral fins short, dorsal rather beyond the middle of the back, nearly above the vent; the caudal fin broad, festooned. Length nearly 16 feet. It differs from *D. Diodon* of Hunter in the forehead not being swollen, and in the lower jaw being produced and bent up, the pectoral being pointed, the dorsal more obtuse, and the body being white-streaked."

This species is only known by the above account extracted from Risso. F. Cuvier placed it in the restricted genus *Delphinus*. Risso appears more correctly to have compared it with *Hyperoodon*, but it differs from that genus in several particulars, especially in the form of the forehead and of the dorsal fin.

Lesson (*Tab. R. A.* 200) forms of this species, and the *Physeter bidens*, Sowerby, the subgenus *Diodon*!

†† *Crest of skull thick and close together on the upper edge.*

#### 5. HYPEROODON LATIFRONS.

Skull large, heavy, solid, the reflexed part of the maxillary bones very thick and thickened internally, so as nearly to touch each other in front of the blower, much higher than the hinder part of the skull; lower jaw rather curved up at the top; teeth 2, solid, conical, acute, rather compressed.

*Hyperoodon latifrons*, Gray, *Zool. E. & T.* 27. t. 4, *skull*.

Inhab. North Sea. Coast of Lancashire; Orkneys; Greenland.

a. Skull imperfect. Orkneys. From Mr. Warwick's collection.

Length of skull (wanting the end) .. 62 inches.

Height of skull behind ..... 42 ..

The skull figured in *Voyage of the Erebus & Terror*, tab. 4.

There is a skull from Greenland, presented by Capt. Wareham, in the Newcastle Museum. Height of occiput, 25; of ridge, 32. Length of skull, 92; to front of ridge, 54; of beak, 26 inches.

There is also a skeleton with the skull from the Firth of Forth, in the College Museum, Edinburgh; the skull of which is 68 inches long; the crest very thick, far apart, and erect internally and rounded externally.

There is a very perfect skull of this species in a garden on the borders of Lancaster Bay, taken in that bay.

The examination of four skeletons and six or eight skulls of *H. rostratum*, and of three skulls of this species, have satisfied me that it must be the remains of a perfectly distinct species: it not only differs from *H. rostratum* in the thickness and solidity of the crest, but in the crest being much higher than the hinder part of the skull, while in all the skulls of *H. Butzkopf* the crest is of the same height with the frontal ridge.

### *Doubtful species.*

1. *Delphinus densirostris*, *Desm. Nouv. Dict. N. ix.* 178; *Mam.* 522, note.

Only described from a fragment of a jaw, 9 inches long,  $2\frac{1}{4}$  inches high, and 2 inches broad at the widest part, straight, pyramidal, triangular at the end, and without any teeth or cavity for any tooth in the lower jaw. It is very heavy and dense. Probably the end of a *Hyperoodon*.

2. Aluginich, Tschieduk, *Chamisso, Nov. Act. Nat. Cur.* xii. 261. t. 20. f. 8, which Fischer (*Syn. Mam.* 515) refers with doubt to *D. spurius*, is perhaps a species of this genus.

One of the species of this genus may probably be the Goose-beaked Whale of Pontoppidan, *Hist. Nat. Norway*, ch. v. 123, 124. f.

### 2. ZIPHIUS.

Head contracted behind; nose produced, not separated from the forehead; eyes moderate; blowers on crown, lunate; teeth two, large, compressed, in the middle of the lower jaw; throat with two diverging furrows; body elongate; pectoral fins small, low down, oval, tapering; dorsal falcate, behind the middle of the body.

Skull with nose elongated, produced, keeled on each side; skull-cavity small; forehead high; hinder wing of the maxilla expanded, horizontal; palate smooth; lower jaw broad behind, narrowed and bent down in front of the large lateral teeth.

*Ziphius*, Cuvier, *Oss. Foss.* v. 350; Gray, *Zool. Erebus & Terror*, 27.  
*Diodon*, pars, Lesson, *Tab. R. A.*; Bell, *Brit. Quad.* 499.  
*Anodon*, pars, Lesson, *Tab. R. A.*  
*Heterodon*, sp., Lesson, *Man. Mam.*  
*Delphinorhynchus*, sp., Gray, *Ann. & Mag. N. H.* 1846.  
*Physeter*, sp., Sow. *Brit. Misc.* 1.

This genus is very like *Delphinorhynchus*, but is easily known by the large size of the teeth in the middle of each side, and the peculiar form of the lower jaw. Cuvier established the genus on fragments of three fossil heads:

1. *Z. curvirostris*, Cuv. *Oss. Foss.* v. 350. t. 27. f. 3.
2. *Z. latirostris*, Cuv. *Oss. Foss.* v. 352. t. 27. f. 4-8.
3. *Z. longirostris*, Cuv. *Oss. Foss.* v. 356. t. 27. f. 9, 10.

Cuvier remarks, describing the first head, that "cette tête a, comme on voit, de grands rapports avec le Cachalot, et encore de plus grands avec l'*Hyperoodon*. Elle ne diffère de ce dernier que parce que les maxillaires ne redressent point sur les côtés du museau en cloisons verticales, et que l'espèce de mur de derrière les narines ne se borne pas à s'élever verticalement, mais qu'il se recourbe pour former un demi-dôme au dessus de les cavités."—*Oss. Foss.* v. 352.

Mr. Bell, following Lesson in adopting his heterogeneous genus *Diodon*, has considered Sowerby's whale as a distinct genus from *Hyperoodon*, but he observes, "whether the generic distinction of the two be correct, appears very doubtful."—*Brit. Mam.* 499.

\* *Jaws elongate.*

1. *ZIPHIUS SOWERBIENSIS.*

Black, grey beneath; lower jaw moderately broad behind, and gradually narrower and slightly bent down in front of the teeth.

*Physeter bidens*, Sowerby, *Brit. Misc.* t. 1, and *Icon. ined. in Mus. Brit.* t.

*Diodon bidens*, Bell, *Brit. Quad.* 497, fig. cop. Sowerby.

*Delphinus Sowerbii*, Jardine, *Nat. Lib.* t. 12, cop. Sowerby.

*D. Sowerbiensis*, Blainv. in *Desm. Nouv. Dict. H. N.* ix. 177.

*D. Sowerbyi*, *Desm. Mam.* 521.

*Delphinorhynchus bidens*, Gray, *Ann. & Mag. N. H.* 1846.

*Heterodon Sowerbyi*, Lesson, *Man. Mam.* 419.

*Ziphius Sowerbiensis*, Gray, *Zool. Erebus & Terror*, t. 572.

f. 3, 4, from Blainv. drawing, p. 53. t. , from skull.

Inhab. North Sea. Elginshire, Brodie, 1800.

The specimen yet observed was 16 feet long and 11 feet in circumference.

Besides the beautiful figure engraved in *Sowerby's British Miscellany*, there is a drawing of the head as sent by Mr. Brodie, made by Mr. Sowerby, and exhibited by him at one of Sir Joseph Banks's Sunday-evening parties, now preserved in the Banksian collection in the British Museum. The skull was preserved in Mr. Sowerby's museum, in Mead's Place, and when distributed at his death it was purchased by the Rev. Dr. Buckland, the Dean of Westminster, and sent to the anatomical museum in Oxford, from whence Dr. Acland kindly sent it to me for examination.

While in Mr. Sowerby's possession, M. De Blainville, when on a visit to England, made a slight sketch of the skull (engraved in *Zool. Erebus and Terror*, t. 5), and, under the name of *D. Sowerbiensis*, gives the following description of it: "Tête osseuse, la machoire supérieure est plus courte et infiniment plus étroite que l'inférieure qui la reçoit; en outre cette machoire inférieure est armée de chaque côté et au milieu de son bord d'un seul dent très fort comprimée et dirigée obliquement en arrière. L'orifice de la vent est en croissant dont les cornes sont tournées en avant."—*Blainv. Desm. Dict. H. N.* ix. 177.

The above description and Blainville's sketch show that it belongs to the genus *Ziphius* of Cuvier, before only known in the fossil state; and the examination of the skull has proved the accuracy of these determinations.

Before discovering the drawing of the skull, I was induced to regard this species, from the lateral position of the teeth and small size of the fins, as the same as the *Delphinorhynchus micropterus* of the coast of France and Belgium (see *Ann. & Mag. N. H.* 1846), believing the difference in the size of the teeth (which Mr. James Sowerby's description appears to indicate) to be only a peculiarity produced probably by the age of the specimen, instead of being, as it has proved to be, a distinctive character of the genus.

#### \*\* Jaws short.

#### 2. ZIPHIUS SECHELLENSIS. The SEHELLE ZIPHIUS.

*Ziphius* de Sechelles (*M. le Duc*, 1839), *Mus. Paris*.

*Ziphius Sechellensis*, *Gray, Zool. E. & T.* 28. t. 6. f. 1, 2, lower jaw.

Inhab. Sechelles. *a.* Skull in *Mus. Paris*.

The skull is very like that of *Delphinus micropterus*, but the nose-bones are thicker, heavier and higher. The teeth in the middle of the lower jaw, as in *Z. Sowerbiensis*, but larger and compressed. The hinder part of the lower jaw is very broad, the front half much narrower and bent down in an arched manner.

Very like the fossil from D'Anvers.



## 3. DELPHINORHYNCHUS.

Head attenuated, contracted behind. Nose produced, bald, not separated from the forehead. Eyes moderate. Lower jaw fitting into a groove in the edge of the upper. Teeth few, small or rudimentary, in middle of lower jaw, not developed till late. Throat with four parallel slits beneath. Body elongate, rather swollen behind. Pectoral fin low down the side, oval, narrow, small. Dorsal falcate, behind the middle of the body, about  $\frac{1}{3}$  from the nose. Blowers on the crown, in a curved line, with the concavity in front. Tail with two falcate lobes, flat, without any central prominence. Sexual organs under middle of dorsal.

Skull triangular. Forehead very high in front and swollen behind. Intermaxillaries curved in front. Nose very long, compressed at the hinder end, very narrow, slightly keeled on each side. Hinder wing of the maxilla expanded horizontally over the orbits. Nasal bones encased in the frontal and intermaxillaries. Temporal pit very small. Palate smooth. Lower jaw-bones elongate, tapering, slender, nearly straight. The ear-bone is attached by an apophysis to the base of the skull. "Vertebrae 38; viz. 6 cervical separate, 10 costal, 11 lumbar, 11 true caudal. Metacarpal bones cartilaginous."—*Dumortier, Mém. Brux.* xiii. t. 10.

Nodus, sp. *Wagler, N. S. Amph.* 34, 1830.

Delphinorhynchus, *Blainv. Rapp, Cetac.*; *Gray, Zool. Ereb. & Terror.*

Delphinorhynchus, sp. *F. Cuvier, Cetac.* 114.

Aodon, *Lesson, Éuv. Buffon.*

Heterodon, sp. *Blainville; Lesson, Man.*

Delphinus, sp. *Blainville; Desm. Mam.*

The skull (as remarked by M. Cuvier) much more resembles that of *Delphinus* than *Hyperoodon*. The animal is at once known from the latter genus by the head not being convex and rounded in front, and by the teeth being in the middle and not at the end of the jaws, and from *Ziphius* by the small size of the teeth.

Blainville, when he first saw the animal on the coast of France, considered it the same as Dale's *Hyperoodon*, and F. Cuvier follows him; but M. Cuvier pointed out, in the *Règne Animal*, the difference in the form of the skull of the French animal.

## DELPHINORHYNCHUS MICROPTERUS. BLAINVILLE'S WHALE.

Body deep ash, beneath white (when alive brownish ash-colour, belly whitish ash); forehead tapering; dorsal fin  $\frac{1}{3}$ , pectoral fin  $\frac{1}{3}$ , from end of nose; blowers before the eyes.

Dauphin de Dale, *Blainv. N. Bull. Soc. Phil.* 1815, 329; *F. Cuv. Mam. Lith.* t. bad.

*Nodus Dalei*, *Wagler*, *N. S. Amph.* 34, 1830.

*Delphinorhynchus micropterus*, *Dumortier*, *Mém. Acad. Brux.* xii t. 1-3, good; *F. Cuv. Cetac.* 114. t. 9. f. 1, not good; t. 7 skull.

*Delphinus micropterus*, *Cuv. Reg. An.* i. 288.

*Heterodon Dalei*, *Lesson*, *Man. Mam.* 419, from *Blainv.*

*Aodon Dalei*, *Lesson*, *Ouvr. Buffon*, i. 155. t. 3. f. 1.

Inhab. Coasts of Europe. Havre, 1825, *Blainv.* Ostend, 1835 *Dumortier*.

M. Dumortier found, near the middle of each side of the lower jaw, an alveolus, as if for a tooth. His figure represents the pectoral as §, and the dorsal as §, from the end of the nose. The following are the measurements of the two described specimens:—

	Blainv. ♀ ft.	Dum. ♀ metres.
Length, entire .....	15.0	3.45
„ of head .....	2.7	(nose) 0.33
„ to blowers ....	2.3	0.44
„ to pectoral ....	3.4	0.91
„ of pectoral ....	1.6	0.30
„ to dorsal .....	9.1	2.04
„ of dorsal .....	0.10	0.27
„ to eye .....	...	0.49
„ to the vulva ...	...	2.21
Circumference .....	7.6	2.0
Width of pectoral ....	0.6	0.12
„ of caudal .....	3.0	0.68
Height of dorsal .....	0.11	0.27
Breadth of blower .....	...	0.10

*b. Upper and lower jaw with few or deciduous teeth. Wings of the maxillary bones expanded and shelving downwards. The beak short, deflexed. Forehead convex. Head rounded, without any beak. Monoceratina.*

*Diodonea*, pars, *Rafin. Anal. Nat.* 60, 1815.

*Monoceratina*, *Gray, Zool. E. & T.*

\* *Lower jaw toothless. Upper jaw with tusk.*

#### 4. MONODON.

Head round and convex in front; dorsal fin none; lower jaw not so wide as the upper, toothless. Upper jaw in the male (and rarely in the female) with a produced spiral tusk.

Cervical vertebræ : first free, second and third united by spinous process, not by the body, thin ; rest free, thin.

*Monodon, Artedi, Gen.* 78 ; *Synon.* 108 ; *Hill. Anim.* 313. t. ; *Linn. S. N.* ed. 6, 17 ; *Schreb.* ; *Gray, Zool. E. & T.* 29, not *Swainson*.

*Narwal, Schonev. Ichth.* 28.

*Narvalus, Lacep. Cet.* 163 ; *Dumeril.* ; *Rafin. Anal. Nat.* 61, 1815.

*Ceratodon, Brisson, R. A. i.* 231, 1762 ; *Illiger, Prod.* 142, 1811 ; *Wagler, N. S. Amph.* 34, 1830.

*Diodon* (or *Diodonta*), *Storr. Prod. Mam.* 42, 1780.

*Monoceros, Charlet. Exerc. Pisc.* 47.

*Monoceros piscis, Willoughb. Pisc.* 42. t. A. f. 2, *App.* p. 12.

*Oryx, Oken, Lehrb. Naturg.* 672, 1815.

Right tusk generally not developed. Female generally without tusk, but sometimes has one : see *Linn. Trans.* xiii. 620.

In the Museum of the College of Surgeons there are several Hunterian preparations of the skull of this animal, Nos. 1147, 1148, 1149, 1150, 1151, showing the two rudimentary teeth inclosed in the cavity, in the female, and the single exerted one in the male skulls.

Mr. Knox observes, the female *Narwal* skulls have two rudimentary teeth in the upper jaw, which are rarely protruded. In the foetus, on each side the upper jaw, in the usual place, are two hollow teeth, obviously the extremities of the spiral permanent teeth of the male ; they are completely imbedded in the jaw ; and if the animal is a male the left tooth continues to grow, the right after a time fills up, its central cavity containing the pulp disappears, and after attaining a growth of five or six inches, the jaw elongates to correspond with the growth of the animal and the other tooth, and the abortive tooth remains imbedded in the jaw for life.—*Trans. R. Soc. Edin.* ii. 413.

The *Monodon spurius*, O. Fab., the type of the genus *Anarhacrus* of Lacépède (*Cetac.* 164), appears by later research to have been founded on an inaccurate description of an *Hyperoodon*, the lower jaw having been mistaken for the upper, and the converse.

# 1. MONODON MONOCEROS. THE NARWHAL.

Black ; when old, whitish-marbled.

*Monodon monoceros, Linn. Faun. Succ.* 2. 16 ; *Syst. Nat.* i. 105 ; *Schreb. Saugh.* t. 330 ; *Desm. Mam.* 523 ; *Fischer, Syn.* 516 ; *Scoresby, Arct. Reg.* i. 486, iii. t. 12. f. 1, 2 ; *Fleming, Mem. Wern. Soc.* i. 146, fig. ; *Gray, Zool. E. & T.* 29 ; *Sow. Brit. Misc.* t.

*M. unicornu, Linn. Mus. Adolph.* i. 52.

M. Narwhal, *Blumenb. Handb.* 137; *Abbild. t.* 44.

M. microcephalus, *Desm. Mam.* 789; *Fleming, Wern. Mem.* i. t.

M. Andersonianus, *Desm. Mam.* 789.

Narwhalus Andersonianus, *Lacep. Cet.* 163; *Desm. N. D. H. N.* 217.

N. microcephalus, *Lacep. Cet.* 163. t. 5. f. 2.

N. vulgaris, *Lacep. Cet.* 142. t. 4. f. 3, from Klein.

Narwhal, *Klein, Miss. Pisc.* ii. 18. t. 2. f. c, cop. *Lacep. t.* 4. f. 3; *Anderson, Iceland*, 225, fig.

Unicorn Narwhal, *Shaw, Zool.* ii. 473. t. 225.

Unicornu Marmum, *Wern. Mus.* 282. t. 283 t.

Einhorn, *Martin, Spitzb.* 94.

OSTEOL. *Camper, Cet.* t. 29, 31, skull; *Albers, Icon.* t. 2, 3; *Home, Lectures Comp. Anat.* t. 42. f. 1; *Cuv. Oss. Foss. v.* t. 22. f. 7; *Anton, Osteol.* ix. t. 6.

Inhab. North Ocean, Scotland.

a. The tooth.

b. Skeleton. Greenland.

c. Skull, female, not in a good state.

The following is the measurement, 1st, of a skull in the College of Surgeons, and 2nd, the female skull c. in the British Museum, in inches and lines.

Skull: length, entire.....	21·6	20·6
„ length of nose .....	9·9	9·3
„ width of orbit .....	14·6	14·0
„ width of notch .....	8·0	7·9
„ width of intermaxillaries .	3·0	3·6

The skeleton in Mus. Hull. Cervical vertebræ: first and second separate, large; rest very thin, separate, rudimentary. Skull: length, entire, 19 inches, of beak,  $8\frac{1}{4}$ ; breadth at notch, 7 inches.

Scoresby gives a very good account of this animal (*Arct. Reg.* i. 131). The best figures are those of *Scoresby*, t. 15, then *Sowerby*, *Brit. Misc.* t. ; but this has a second horn erroneously added, which was not in the original drawing. *Bonnaterre's* figure is far too ventricose; it has been copied by *Lacep.* t. 4. f. 3, *Blumenbach*, t. 44, and others. *Duhamel's Pech.* iii. t. 26. f. 1, is, on the other hand, too slender, and with too small a head.

1. Narwalus microcephalus, *Lacep.* t. 5. f. 2, from a drawing of Mr. W. Brand, appears to be only a bad representation of this species.

2. Narwalus Andersonianus, *Lacep. Cetac.* 163, from *Anderson, Iceland*, 225, described from the same specimen as Mr. Brand drew, is figured by *Lacep.* t. 4. f. 2.

**\*\* Teeth of upper and lower jaw conical, deciduous.**

### 5. BELUGA.

Head rounded; forehead convex; teeth conical only on the front half of the jaws, oblique, often truncated, and the upper often deciduous; dorsal fin none; pectoral suboval; tongue oblong, with a simple, slightly raised edge; skull with the nose and the hinder wing of the maxilla bent down on the orbits, making the forehead very convex; lower jaw not so wide as the upper, with the condyle low down below the middle of the hinder edge.—*Zool. Ereb. & Terror*, t. 29. fig. 3.

*Delphinopterus*, *Lacep. Cet.* 243.

*Delphinapterus* *F. Cuv. D. S. N.* lix. 517, 1829.

*Beluga*, *Rafin. Anal. Nat.* 60, 1815; *Gray, Spic. Zool.* 2, 1828; *Lesson, Man.*; *Bell, Brit. Quad.* 1837.

*Delphis*, *Wagler, N. S. Amph.* 34, 1830.

*Delphinus*, pars, *Linn.*; *Rüger, Prod.* 143, 1811.

*Catodon*, pars, *Artedi, Gen.* 78; *Fleming, B. A.* 29.

*Cetus*, pars, *Brisson, R. A.* i. 227, 1762.

*Physeter*, pars, *Linn. S. N.*

*Cachalot*, pars, *Lacep. Cet.*

*Phocæna*, pars, *F. Cuv. Cetac.*

There is a great similarity in the general form of the skulls of *Phocæna*, *Beluga* and *Monoceros*, but independent of the size and teeth, they differ in the form of the convexity in front of the blower; in *Beluga* the front of the blower is flattish, in *Monoceros* there is a broad, half-oblong convexity, and in *Phocæna* a squarish tuberosity.

The genus *Delphinopterus* was formed by Lacépède to contain this animal, which he before described as a *Catodon*, and the *D. Senedette*, which is probably a *Catodon*. It has been applied by Peron, Cuvier and others to a very different animal.

### 1. BELUGA CATODON. The NORTHERN BELUGA.

White; young black; the nose of the skull nearly  $\frac{1}{2}$  the entire length,  $1\frac{1}{2}$  the length of its width at the anterior notch; teeth  $\frac{1}{2}$ — $\frac{3}{4}$ .

*Balæna minor* in inferiore maxilla tantum dentata, sine pinna aut spina in dorso.—*Sibbald, Phal.* 9; *Raii Syn. Pisc.* 15.

*Cetus bipinnis*, *Brisson, R. A.* 361.

*Catodon fistula* in rostro, *Artedi, Gen.* 78; *Syn.* 108.

*Physeter Catodon*, *Linn. S. N.* 107; *Gmelin, S. N.* i. 226; *Desm.*

*Mam.* 525, from *Balæna minor*, *Sibbald, Phal.* 9.

? *Cetus minor*, *Brisson, Reg. Anim.* 361.

- Beluga leucas*, Gray, *Spic. Zool.* 2, 1828.  
*Physeter macrocephalus*, var.? Catodon, Fischer, *Syn.* 518.  
*Balaena albicans*, Klein, *Miss. Pisc.* ii. 12.  
*Delph. leucas*, Pallas, *Reise*, iii. 92. t. 79; Gmelin, *S. N.* 1232;  
*Desm. Mam.* 519; *Zool. Ross. Asiat.* t. 32, ♀; *Mem. Wern.*  
*Soc.* iii. 17, ♂; *Cuv. Oss. Foss.* v. t. 22. f. 5, 6; Bell, *Brit.*  
*Quad.* 491, fig.  
*Beluga Catodon*, Gray, *Zool. Erebus & Terror*, 29. t. . f.  
*Catodon Sibbaldii*, Fleming, *B. A.* 29, from Sibbald.  
*Small Catodon*, Shaw, *Zool.* ii. 501.  
*Round-headed Cachalot*, Penn.  
*Beluga borealis*, Lesson.  
*Physeter macrocephalus* β, Gmelin, *S. N.*  
*Delphinapterus Beluga*, Lacep. *Cetac.* 243; Scoresby, *Arct. Reg.*  
*i.* 500, ii. t. 14.  
*Catodon albicans*, Lacep. *Cetac.* 218.  
*Cetus albicans*, Brisson, *Reg. Anim.* 359.  
*Albus Piscis Cetaceus, Raii Syn. Pisc.* 11.  
*Beluga*, Shaw, *Zool.* ii. 515. t. 223.  
*Delphinus albicans*, O. Fab. *Faun. Græn.* 50; Bonnat. *Cet.* 24.  
*Delphinapterus leucas*, Gerard, *Dict. Sci. Nat.* vi. 65.  
 ? *Dauphin blanc du Canada*, Duham. *Pesch.* ii. x. t. 10.  
*Delphinus Canadensis*, Desm. *Mam.* 516, from Duham.  
*Inia*? *Canadensis*, Gray, *Zool. Erebus & Terror*, t. 5. f. 1, from  
 Duham. *Drawing.*  
*OSTEOL. Cuv. Oss. Foss.* v. 287. t. 22. f. 5, 6, head.  
*Inhab. North Sea. Greenland. Scotland, Sibbald.*

- a. Skeleton. Length, 15 feet. Greenland.
- b. Skull. Greenland. Length, entire, 20 inches; of beak,  $9\frac{1}{4}$ ; width at notch, 6, at orbit,  $1\frac{1}{4}$  inch.
- c. Stuffed specimen. Greenland.
- d. A male specimen,  $12\frac{1}{4}$  feet long, 6 feet 8 inches in circumference at the thickest part, called *Keela luak* by the Esquimaux.
- e. Skull. Eschscholtz Bay, Behring's Straits. Presented by Captain Kellat, R.N. and Lieut. Wood, R.N.

Length of skull b, entire, 21 inches; of nose, 10; of tooth-line,  $6\frac{1}{4}$ ; width at orbit,  $11\frac{1}{4}$ ; at notch,  $6\frac{1}{4}$  inches.

Duhamel (tab. 10. f. 4) figured the front half of a Dolphin under the name of *Dauphin blanc du Canada*, which Desmarest has named *Delphinus Canadensis*. M. Blainville gave me a tracing of the original drawing from which Duhamel engraved his figure (which is engraved in the *Zoology of the Erebus and Terror*, t. 5. f. 1). The form of the beak and the absence of a distinct dorsal fin induced me to believe that it might be a species of *Inia*; but from inquiries recently made in Canada, I have very little

doubt that Duhamel's animal was the *Beluga* which is common in that country. In the St. Lawrence they rarely exceed 15 feet long.

## 2. BELUGA KINGII. The AUSTRALIAN BELUGA.

Nose of the skull short, not half the entire length, scarcely longer than its width at the notch; teeth  $\frac{10}{9}$ , small, hooked.

*Delphinus* (*Delphinapterus*) *Kingii*, Gray, *Ann. Phil.* 1827, 375; *Fischer, Syn.* 514.

*Beluga Kingii*, Gray, *List Mamm. B. M.* 104; *Zool. Erebus & Terror*, 30. t. 7, skull.

Inhab. Coast of New Holland, *Capt. P. P. King*.

a. Skull: length, entire,  $13\frac{1}{2}$ , of beak  $5\frac{1}{2}$ ; width at notch  $4\frac{1}{4}$ , at orbits 8 inches. New Holland. Presented by *Capt. P. P. King, R.N.*

Specimen described, *Gray, Ann. Phil.* 1827, and *Zool. Erebus and Terror*, t. 7.

This may be the *Jacobite*, or *Tursio corpore argenteo extrematibus nigricantibus*, *Commerson MSS. Delphinus Commersonii*, *Lacep.* 317, from Cape Horn, cited by *Cuv. R. A. i.* 291, and *Oss. Foss.* v. 289.

## Doubtful Genera.

### ? 1. EPIODON.

Dorsal fin none. Teeth of lower jaw rounded; upper jaw toothless.

*Epiodon*, *Rafinesque, Précis Someol.* 13 (1814); *Anal. Nat.*....no character.

*Hyperodon*, sp. (pars), *Lesson, Man.* 420.

*Delphinus*, pars, *Desm. Mam.* 521; *Fischer, Syn.* 516.

### 1. EPIODON URGANANTUS.

*Epiodon Urganantus*, *Rafinesque, Précis Someol.* 13, 1814.

*Delphinus Epiodon*, *Desm. Mamm.* 521; *Fischer, Syn.* 516.

*Heterodon Epiodon*, *Lesson, Man.* 420.

Inhab. Sicily.

### 2. OXYPTERUS.

"Dorsal fins two."

*Oxypterus*, *Rafinesque, Précis Someol.* 13, 1814.

*Delphinus Oxypteri*, *Desm. Mam.* 516; *Fischer, Syn.* 509.

*Oxypterus Mongitori*, *Rafinesque, Précis Someol.* 13.

*Delphinus Mongitori*, *Desm. Mam.* 516; *Fischer, Syn.* 509.

Inhab. Sicily.

## 1. OXYPTERUS RHINOCEROS.

Black; white-eared.

*Delphinus Rhinoceros*, Quoy & Gaim. *Zool. Uranie*, 86. t. 11. f. 1;  
*Desm. Dict. Class. H. N.* v. 359; *Fischer, Syn.* 509.

*Oxypterus Rhinoceros*, Lesson, *Man.* 411.

Inhab. Equinoctial Ocean, lat. 5° 28'.

\*\*\* *Teeth in both jaws permanent, compressed.*

## 6. NEOMERIS.

Dorsal fin none; nose of skull short, rounded at the end, flat, shelving above; teeth numerous, compressed, nicked, acute, extending nearly the whole length of the jaw.

*Neomeris*, Gray, *Zool. Erebus & Terror*, 30, 1846.

*Delphinus*, sp. *Cuvier, R. A.* i. 291.

*Delphinapterus*, sp. *Temm. Faun. Jap.* 7.

## 1. NEOMERIS PHOCÆNOIDES. The NEOMERIS.

Black; teeth  $\frac{1}{8}$  or  $\frac{1}{10}$ . Length 4 feet.

*D. Phocænoides*, *Dussumier, MSS.*; *Cuv. Reg. Anim.* i. 291.

*Delphinus melas*, *Temm. Faun. Japon.* t. 25, t. 26.

*Delphinapterus melas*, *Temm. Faun. Jap.* 7.

*ANAT. Fauna Japon.* t. 25, *teeth*, t. 26, *bones*.

Inhab. Indian Ocean, Japan. "Cape of Good Hope," or "Malabar," *Dussumier*.

The figure in the *Fauna Japonica* is from a drawing made by a Japanese artist under Burger's inspection.

The skull of *Delphinus melas* in the Leyden museum is more swollen and broader than that of *Phocæna communis*; the nose is shorter, broader, more rounded at the end and nearly flat, not shelving above; teeth  $\frac{1}{8}$ , larger and stronger; skull  $\frac{1}{2}$  the entire length (in *Phocæna*  $\frac{1}{3}$ ). *Nameno-juo*, Japan.

The short description of the *D. Phocænoides* of Cuvier, which *Dussumier* is said to have discovered at the "Cape of Good Hope," agrees with the figure in the *Fauna Japonica*. A skull in Mus. Paris, marked "*D. Phocænoides*, brought from Malabar by *Dussumier* in 1837." It is broader and shorter than that of *Phocæna communis*; teeth spatulate, rounded, oblique,  $\frac{1}{8}$ ; palatine bones and intermaxillaries broad, as seen in the roof of the beak. Length of this skull 7, of nose  $2\frac{1}{4}$ , width at notch  $2\frac{1}{4}$  inches.

The skulls are much alike, but they may be two species characterized by the number of the teeth.



## 7. PHOCÆNA.

Dorsal fin in the middle of the body; skull-nose depressed, broad, the hinder part of the maxilla slightly shelving downwards over the orbits; the intermaxillaries and vomer forming part of the palate; teeth numerous, spatulate, compressed, extending nearly the whole length of the jaw.

*Phocæna*, *Rondel. Pisc.* 474; *Gray, Spic. Zool.* 2, 1828; *Zool. Ereb. & Terror*, 30.

*Phocæna*, sp. *Cuvier*; *F. Cuvier*; *Wagler, N. S. Amph.* 34.

*Delphinus*, sp. *Linn.*; *Illiger, Prod.* 143, 1811.

The foetus of *Phocæna* has two bristles on each side of the nose; as the animal grows, these bristles fall out, and each leaves a small pit on the side of the nose, which Klein (*Hist. Piscium*, i. 24) mistook for the nostrils, as has been well observed by *Prof. Eschricht*, 250.

Mr. F. Knox gives many details of the anatomy of this species in his 'Catalogue of Preparations relative to Whales,' 1838, p. 32.

## 1. PHOCÆNA COMMUNIS. COMMON PORPOISE.

Black.

*Phocæna*, *Rondel. Pisc.* 473; *Gesner, Aquat.* 837, fig.; *Aldrov. Pisc.* 719, fig.

*Phocæna Rondeletii*, *Willoughb. Pisc.* 31. t. A 1. f. 2.

*Tursio Marsouin*, *Bellon. Aquat.* 16, fig.

*Tursio Plinii*, *H. N.* ix. 9.

*Phocæna communis*, *Lesson, Man.* 413; *F. Cuv. Cetac.* 172;

*Gray, List Mam. B. M.* 104; *Spic. Zool.* 2, 1828; *Zool. E.*

& *T.* 30; *Jackson, Boston Journ. N. H.* v. 167.

*Delphinus Phocæna*, *Linn. Faun. Suec.* 17; *S. N. i.* 108; *Schreb.*

*Saugth.* t. 342; *Bonnat. Cet.* 18. t. 1. t. 10. f. 1; *Desm. Mam.*

516; *Fischer, Syn.* 510; *Cuv. Oss. Foss.* v. t. 21. f. 1, 2, *skull.*

*Marsouin commun*, *Cuvier, Menag. Mus. t. Reg. Anim.* i. 279.

*Porpesse*, *Shaw, Zool.* ii. 504. t. 229, 230, 231.

*ANAT. Knox, Cat. Prep. Whales*, 1838, p. 37; *Jackson, Boston*

*Journ. N. H.* v. 167; *Sibson, Trans. Roy. Soc.* 1848; *Bonnat.*

*Cet.* t. ; *Lacep. Cet.* t. 20. f. 2, *skel.*

Inhab. North Sea. Mouth of rivers Thames and Severn.

a. Thames. Presented by Mr. Leadbeater.

b. Skull. From Dr. Mantell's Collection.

c, d, e. Stuffed. Thames. Presented by Messrs. J. and C. Grove.

f. Skeleton. English Coast.

Mr. Knox (*Cat. Prep. Whales*, p. 32, 1838) gives the particulars of two skeletons of female specimens:—1. Of a gravid female taken in the Firth of Forth, 56 inches long and 34 inches

in circumference. Teeth  $\frac{11}{11}$ - $\frac{11}{11}$ . Vertebrae 65: cervical 7; dorsal and ribs 13; posterior 45. V-shaped bones commencing between the thirty-fourth and thirty-fifth vertebrae. Length of base of cranium 11, of spinal column 42 inches = 53. Weight of cranium 1 lb. 1 oz., of trunk and extremities 2 lb. 15 oz. = 4 lb.

2. Of a female 74 inches long, killed in the Thames: has coracoid clavicles. It also differs from the preceding in the following particulars:—There are only twelve ribs on each side (24); the vertebrae towards the caudal extremity are much more slender and delicate, while the transverse and spinous processes of the dorsal and lumbar vertebrae are much broader and stronger; the cranium is considerably smaller and narrower. The elevation of the occipital bone less, but more rounded. Condyles of the occipital bone greatly less, yet the weight of both skeletons is nearly equal. There are only 64 vertebrae, but the last is evidently wanting, and has been lost.—*Knox*, p. 32. A foetus was taken from the uterus of the female porpoise (whose skeleton, No. 1. is above referred to from the Firth of Forth); it measured, from snout to centre of tail, 26 inches; circumference 16 inches. Its great bulk, considering the size of the parent porpoise (56 inches), is remarkable, and renders the supposition that the porpoise does not suckle her young extremely probable.—*Knox*, p. 34. n. 104.

This difference in the skeleton shows the probability of there being two species confounded on our shores, or else that there are great variations in the bones of this animal even of the same sex.

- c. *Upper and lower jaw with many teeth, rarely deciduous with age. Wings of the jaw-bone horizontally produced over the orbits.* Delphinina.

Delphinina, *Gray, Zool. Ereb. & Terror*, 30.

- \* *Head rounded in front, not beaked. Nose of skull scarcely so long as the brain-cavity. Dorsal distinct.*

#### 8. GRAMPUS, *Gray*.

Head rounded, forehead rather convex. Teeth conical, often truncated in the front half of the lower jaw. Dorsal distinct, low, rather behind the middle of the back. Pectorals ovate, rather elongate.

Skull depressed; intermaxillaries dilated, covering great part of the maxilla above, rather swollen behind in front of the blowers, the hinder wing of the maxilla horizontal and rather thickened and bent up over the orbit, and slightly dilated and reflexed just in front of the notch.

*Grampus*, pars, *Gray, Spic. Zool.* 2, 1828.

*Grampus*, *Gray, Zool. E. & T.* 30, 1847.

*Cetus*, sp. (arica), *Wagler*, N. S. *Amph.* 33.

*Phocaena*, sp. *Wagler*, N. S. *Amph.* 34.

# 1. GRAMPUS CUVIERI. CUVIER'S GRAMPUS.

Bluish black; beneath dirty white, passing into the black on the sides; nose of the skull broad at the base, narrow in front and concave on the sides, not quite half the entire length of the skull.

*Grampus Cuvieri*, *Gray*, *Ann. N. H.* 1846; *Cat. Ost. B. M.* 36; *Zool. Erebus & Terror*, 31.

*Delphinus griseus*, *Cuv. R. A.* i. 290; *Ann. Mus.* xix. t. 1. f. 1, not good, cop. *Schreb.* t. 345. f. 1; *Oss. Foss.* v. t. 22. f. 1, 2; *F. Cuvier*, *Cetac.* 182. t. 12. f. 2; *Desm. Mam.* 518; *Fischer*, *Syn. Mam.* 512.

*Phocaena grisea*, *Lesson*, *Man.* 413; *Wagler*, S. N. *Amph.* 34.

*Grampus griseus*, *Gray*, *Spic. Zool.* 2, 1828.

? *Grampus*, *Hunter*, *Phil. Trans.* 1787, t. 17.

? *Delphinus ventricosus*, *Lacep. Cet.* 311. t. 15. f. 3; *Schreb. Saugh.* t. 341, both copied from *Hunter*, t. 17.

? *Phocaena ventricosa*, *Lesson*, *Man.* 415, from *Hunter*.

*Marsouin*, *Duhamel*, *Pech.* iv. t. 9. f. 5.

*ANAT. Cuv. Oss. Foss.* v. t. 22. f. 1, 2.

Inhab. North Sea. Coast of France, Rochelle, *D'Orbigny*, 1822.

Isle of Wight, Hampshire, *Rev. C. Bury*, 1845.

a. Skull. Isle of Wight. Presented by the *Rev. C. Bury*.

The measurements of *D'Orbigny's* (1st) old and (2nd) young specimens.

	ft.	in.	
Length, entire .....	10	0	7 feet.
"    to blowers .....	2	6	
"    to pectoral fin.....	3	6	
"    of pectorals.....	3	0	
"    of dorsal .....	5	0?	
Width of tail .....			
Height of dorsal .....	1	2	

## Skull.

Length, entire .....	17	6
"    of nose.....	8	0
"    of teeth, series lower jaw	2	3
"    of lower jaw .....	12	0
Width at notch .....	7	0
"    at orbit .....	11	0
"    at middle of nose .....	3	10
"    of intermaxillary .....	3	3
Height at occiput .....	9	0

This species loses its upper teeth at an early period and preserves only a few of its lower ones. The dorsal fin is lower and further back than in *D. Orca*, Cuv. R. A. i. 290.

M. F. Cuvier (*Cetac.* 193) has referred the *Marsouin* of Duhamel (*Pech.* iv. t. 9. f. 5) to *D. globiceps*, but M. Duhamel particularly observes that the pectoral and dorsal were nearly equidistant from the head, and that the under side is paler than the back, golden green, not white, which does not agree with *D. melas*. In both these points it suits better with this species.

This species was first described from a skeleton and drawing sent from Brest to Paris. The bad colouring of the drawing induced M. Cuvier to call it *D. griseus*, but it is black and not grey. M. F. Cuvier regards it as distinct from *D. aries* of Risso, which his brother thought was the same.—*F. Cuv. Cetac.* 184.

In D'Orbigny's specimens the dorsal was injured, and in two of them nearly destroyed. The young, 7 feet long, had eight conical, acute teeth. The older, two males and one female, 10 feet long, had only six or seven blunt, carious teeth. The upper jaw longest (4 inches), without any indication of teeth, even in the young one, but with a slight groove for the reception of the edge of the lower jaw.

M. D'Orbigny says that this species has "most affinity in the external form to the *Grampus* of Hunter, t. 17, which Lapepède called *D. ventricosus*, but differs essentially in the total absence of teeth in the upper, and by the number in the lower jaw." Hunter does not figure any teeth in the upper and only a few in the lower jaw.

## 2. GRAMPUS RISSOANUS. RISSO'S GRAMPUS.

Bluish white, with irregular, brown-edged, scratch-like lines in all directions. Females uniform brown, with similar scratches.

*Delphinus Rissoanus*, Laur. F. Cuv. Mam. Lithog. t. . *Cetac.* 196. t. 12. f. 1; Schlegel, *Abh.* 33; Fischer, *Syn. Mam.* 512; Desm. *Mam.* 519.

*D. de Risso*, Cuv. *Ann. Mus.* xix. 12. f. 4, cop. Schreb. t. 345. f. 4; Risso, *Ann. Mus. H. N.* xix. t. 1, 2; *Europ. Merid.* 23.

*Delphinus aries*, Risso, Cuv. *Ann. Mus.* xix. 12. t. 1. f. 4.

G. Rissii, *Jard. Nat. Lib.* vi. 219. t. 18.

*Cetus* (? —), Wagler, *N. Syst. Amph.* 33.

*Phocæna Rissoanus*, Lesson, *Man.* 416.

*Grampus Rissoanus*, Gray, *Zool. Erebus & Terror*, 31.

Var. 1. Dorsal, pectoral, tail, and hinder part of the body below, varied with black.—*F. Cuv. l. c.* f. 13. f. 1, male.

Inhab. Nice. Risso, Laurillard.

M. Laurillard observes, the teeth are conical, early deciduous, especially of the upper jaw. He gives the following measurements:—

	ft.	in.
Length, entire.....	9	0
„ of head ....	1	6 $\frac{1}{4}$
Height of dorsal....	0	9

Lesson refers this species to the genus *Globiocephalus*, but the position of the dorsal and the form of the pectoral, as well as the description of the teeth, make me believe it rather belongs to this genus. M. Cuvier observes that his *D. griseus* is only described from a bad drawing of this species, but M. F. Cuvier, who had a new description, and M. Laurillard, consider them as distinct.—*Reg. Anim.* i. 290; *F. Cuv. Cetac.* 184.

In the Paris Museum there is a skull from Rochelle, sent by M. D'Orbigny, and a second from Nice, brought by M. Laurillard, which greatly resemble one another.

### 3. GRAMPUS RICHARDSONII.

Lower jaw straight, regularly diverging, scarcely bulging on the side behind, united by a rather long, wide symphysis in front; obliquely truncated in front, with a rather prominent, tuberosus gonys. Teeth 4-4, rather large, far apart, conical, tapering at the tip, but subcylindrical at the base. .

Grampus, n.s., Gray, *Zool. Erebus & Terror*, 31.

Inhab. —? British Museum, from Haslar Hospital.

a. Lower jaw. Presented by the Haslar Hospital Museum.

This jaw appears to differ from the lower jaw of *G. Cuvieri* in being much thicker at the symphysis, very obliquely truncated in front, and rather projecting below. Teeth 4-4, large, conical, rather acute and recurved; the upper edge behind the teeth round, with many minute holes on the edge. It measures as follows:—

	ft.	in.
Length, entire .....	16	0
„ front truncation ..	2	0
„ of teeth series ....	2	0
Breast, near condyle .....	4	0
„ in front .....	1	0
Width at condyles .....	11	6

### 4. GRAMPUS SAKAMATA. The SAKAMATA.

D. Orca, *Schlegel, Faun. Jap.* 25.

Grampus Sakamata, Gray, *Zool. Erebus & Terror*, 31.

Inhab. Japan.

M. Schlegel (*Faun. Japon.* 25) described a dolphin found on the coast of Japan, and called *Sakamata kuzira*. It is said to have a high dorsal, and to be black with white spots on the belly, back and sides, near the pectoral fin. The eyelids and lips pale purple, the latter often white-spotted; the head is rounded, the upper jaw pointed and toothless; the lower short and narrow and toothed.

Schlegel, who refers this species to *D. Orca*, says the wanting teeth in the upper jaw is a mistake; but it is probably a *Grampus*, which often wants them in that jaw. I do not see why one part of the description should be relied on and not the other.

In the Museum of the College of Surgeons is a skull (No. 1138, Hunterian) apparently belonging to another species of this genus.

The teeth are 12-12, small, conical, curved, very acute. Nose rather concave on the sides; intermaxillaries nearly as wide as the jaws. Lower jaw obliquely truncated in front. Length, entire, 24 inches; of nose 12, of tooth-line 7, of lower jaw 19 width at notch 9, of middle of beak  $6\frac{1}{4}$ , at orbits  $15\frac{1}{4}$  inches.

#### 9. GLOBIOCEPHALUS.

Head round, forehead very prominent. Teeth conical, large only on the front half of the jaws; deciduous in the old one. Upper jaw largest? Pectoral narrow, linear-ovate, low down. Dorsal falcate, about the middle of the back.

Skull flattened and concave in front of the blower; nose broad, flattened, rugose above; intermaxillary bones very broad, covering the greater part of the upper surface of the upper jaws; the hinder wing of the jaw-bone horizontal and bent up on the edge over the orbits, and slightly expanded and reflexed just in front of the orbit notch.

The sucking young have no visible teeth; the adults have teeth in each jaw, but the aged individuals have generally lost them in both.—*Fleming*.

*Globiocephalus*, Lesson; Gray, *Zool. Ereb. & Terror*, 32, 1846.

*Globiocephala*, Lesson, *N. Tab. R. A.* 200, 1842.

*Physeter*, sp. *Risso*.

*Grampus*, pars, Gray, *Spic. Zool.* 2, 1828.

*Cetus*, sp. *Wagler*, *N. S. Amph.* 33, 1830.

*Delphinus*, sp. *Cuvier*.

The skull of the young has no bony *tentorium*, though in the old specimens it is well-marked.—*Jackson*, *Bost. Journ. N. H.* v. 167.

## 1. GLOBIOCEPHALUS SVINEVAL. The PILOT WHALE.

Black, streak from throat to vent (sometimes dilated into a cross band) white; teeth  $\frac{3}{4}$  to  $\frac{1}{2}$ , rarely  $\frac{1}{4}$ .—*Fleming*. The upper surface of the maxillaries and intermaxillaries rugose in front; intermaxillaries form a triangular patch in front of the palate. Second and third cervical vertebræ co-ossified.

Petit Cachalot, *Daub. Acad. Sci.* 1782, t. 1, cop. *Bonnat. Cetol.* t.

Cachalot Svineval, *Lacep. Cet.* 216, not *Syn. Sibbald*.

Narwal edente, *Camper, Cetac.* t. 33, 34.

Grampus globiceps, *Gray, Spic. Zool.* 2, 1828.

Ca'ing Whale, *Neill, Orkney and Shetland*, 1836, 221.

Delphinus Melas, *Trail, Nichol. Journ.* xxii. 1809, 21. t.

D. deductor, "*Trail*," *Scoresby, Arct. Reg.* i. 496. t. 13. f. 1, 1820, cop. *Jardine Whales*, t. 17; *Bell, B. Q.* 483. fig.

D. globiceps, *Cuv. Ann. Mus.* xix. t. 1. f. 2. ♀, 1812 (cop. *Schreb.*

t. 345. f. 2, 3); *Oss. Foss.* v. 285. t. 21. f. 11, 13; *Schreb.*

*Saugh.* t. 345; *Blainville, Journ. Phys.* 1817, 74. t. 6; *Desm.*

*Mamm.* 819; *Fischer, Syn. Mamm.* 512.

Phocæna globiceps, *Lesson, Man.* 416.

Delphinus Grampus, *Cat. Mus. Col. Surg.* n. 1137.

Globiocephalus Svineval, *Gray, Zool. Ereb. & Terror*, 32.

ANAT. *Daubenton, Mem. Acad. Sci.* 1782, t. 4, cop. *Lacep. Cet.*

t. 9. f. 2; *Bonnat. Cet.* t. 6. f. 2.

Black Whale, Howling Whale, Social Whale, Bottle-head, *Sailors*.

Hab. North Sea.

a. Skull. Orkneys. Presented by Prof. Trail.

b. Lower jaw half-grown —?

c. Adult, stuffed. English Coast.

Dr. Fleming gives the following measurements:—

	ft.	in.
Length of animal, entire ..	19	6
"    of pectoral.....	3	6
"    of dorsal .....	2	3
Width of pectoral .....	1	6
"    of tail .....	5	0
Height of dorsal .....	1	3
Circumference .....	10	0

The following are the measurements of three skulls, in feet and inches: 1. is in the British Museum, 2. Mus. Coll. Surg. n. 1137, and 3. n. 1138 of the same collection:—

	1.		2.		3.	
	ft.	in.	ft.	in.	ft.	in.
Skull: length of, entire....	28	0	29	0	24	0
„ of nose ....	15	0	15	0	12	0
„ of teeth, series	9	0	8	6	7	0
„ of lower jaw.. ..	.....		.....		19	0
width at notch.....	11	6	11	0	9	0
„ at orbit .....	19	6	19	6	15	6
„ of intermaxillary	9	0	7	0		
„ of middle of nose .....			9	6	6	6
height at occiput....	15	0				

Female suckling, with the young, 4 feet 6 inches long in December (*Watson*), and 7 feet long in January.

Vertebrae 55:—7 cervical, first free, second and third united by body and partly by lateral process, rest free; 11 dorsal, and 37 posterior.

Var. 1? *Delphinus globiceps*, *Risso*, *Europ. Merid.* iii. t. 1. f. 1; *F. Cuv.* 223.

Black, with a grey band on each side from the throat to the vent; head large, round, swollen; jaws equal; teeth  $\frac{2}{2}$ , round, conical, curved.

Inhab. Nice, *Risso*.

Is probably the same as *D. Svineval*, but M. F. Cuvier regards it as distinct.

## 2. GLOBIOCEPHALUS INTERMEDIUS. BLACK-FISH.

Teeth  $\frac{3}{3}$ — $\frac{3}{3}$ , several being quite loose. Skin uniform dull slate-colour, belly with an ill-defined, narrow, clouded white streak extending from beneath the jaw to about the anus, being much broader and whiter in some parts than in others, and most so beneath the jaw.

*Delphinus intermedius*, *Harlan*, *Journ. Acad. Sci. Philad.* vi. 51. t. 1.

*D. Harlani*, *Fischer*, *Syn. Mam.* 656; *Schinz*.

*Globiocephalus Melas*, *Dekay*, *Zool. New York*, t.

*Phocæna globiceps*, *Sampson*, *Silliman Amer. Journ. Sci.* 3-301, fig.

*Delphinus globiceps*, *Jackson*, *Boston Journ. N. H.* v. 160. t. 15. f. 1.

*Globiocephalus Svineval* var.?, *Gray*, *Zool. E. & T.* 32.

Black-fish, *American sailors*, *Neuwied*, *Voy. Amer. Nord.* iii. 232.

ANAT. *Jackson*, *Boston Journ. N. H.* v. 160. t. 15. f. 2, stomach.

Inhab. Coast of North America.



Weight estimated at 255 lb. Length, from nose to end of tail, 86 inches; to pectoral fin 20, to dorsal 38, to blow-hole  $9\frac{1}{2}$ , to eye  $9\frac{1}{4}$ , to penis 49, to anus 56 inches; span of tail 21; pectoral fin  $5\frac{1}{2}$  across the base, 21 inches along the anterior edge, and 6 inches along the posterior; circumference in front of dorsal fin 46; blow-hole concave anteriorly and  $1\frac{1}{4}$  inch across from tip to tip; eyes  $\frac{7}{8}$  of an inch. Vertebrae 58; bodies of six of the cervical co-ossified; 11 dorsal, and posterior to them were 40.—*Jackson, l. c.*

It has been thought that the European and American specimens were the same, but the anatomical descriptions show the following differences:—

1. *American*.—Vertebrae 58: cervical 7 (body of 6 first co-ossified); dorsal 11; posterior 40.—*Jackson, l. c.* 166.
2. *European*.—Vertebrae 55: cervical 7 (body and second and third co-ossified); dorsal 11; posterior 37.—*Cuv. Oss. Foss. v.*

In the Paris Museum there is a skull of this genus from Guadaloupe, named *D. globiceps*. The middle of the intermaxillaries are as wide as the maxillae. Skull: length, entire,  $23\frac{3}{4}$  inches; of nose,  $11\frac{1}{4}$ ; width at notch  $8\frac{1}{4}$ , at middle of beak 8–9 inches.

### 3. GLOBIOCEPHALUS AFFINIS. SMALLER PILOT WHALE.

Teeth  $\frac{1}{4}$ , small, conical, curved, very acute; nose exactly half as long as the head, rather tapering, and rather concave on the sides; intermaxillary nearly as wide as the jaw; lower jaw obliquely truncated in front.

*Delphinus Grampus*, *Cat. Mus. Col. Surg.* n. 1138; *Hunterian Col.* n. 686.

*Delphinus Melas*, *Owen, British Fossil Mammalia*.

*Globiocephalus affinis*, *Gray, Zool. Ereb. & Terror*, 32.

Inhab. —? *Mus. Col. Surg.*

	ft.	in.
Skull: length, entire.....	24	0
„ of nose .....	12	3
„ teeth-line .....	7	0
„ lower jaw .....	19	0
width of nose at notch ..	9	0
„ of middle of nose .	6	6
„ at orbits .....	15	6

This is probably a young specimen of *Globiocephalus Svineval*. The skull differs in being rather slenderer in front, and in the intermaxillary not being rugose in front. In the *Catalogue of the Mus. Col. Surg.* 165, n. 1138, it is called “the skull of a small

Grampus," Hunterian, and n. 1136, "the skull of a large Grampus," Hunterian. It appears to be the skull which Mr. Owen gives the measurement of, under the name of *D. Melas*, in his account of *Phocæna crassidens*, in the work on British Fossil Mammalia.

#### 4. GLOBIOCEPHALUS SIEBOLDII. The NAISO-GOTA.

*Delphinus globiceps*, Temm. *Fauna Japon.* t. 27.

*Globiocephalus Sieboldii*, Gray, *Zool. Ereb. & Terror*, 32.

ANAT. *Fauna Japon.* t. 27, skull, &c.

M. Siebold brought with him a figure of a very young specimen, 5 feet 6 inches long, of this species, made by M. Villeneuve, which is copied in the *Fauna Japonica*, and a complete skeleton.

M. Temminck regards it as undoubtedly the same as the European, but yet allows that there are some differences between it and the adult specimen observed on the European shores. The forehead is less swollen, and the pectoral fins are rather larger than in *G. Svineval* of Europe. This species is called in Japan *Naiso-gota*.

The Japanese distinguish two other species:—1. *Sibo golo*, which is purple, with a white spot behind the dorsal fin, and the lower jaw furnished with many plaits. 2. *Ohanan golo*, black, with a larger muzzle and more spacious mouth; the dorsal  $\frac{1}{2}$  from head, back edge before the middle; pectoral  $\frac{1}{2}$  from head; pectoral  $\frac{1}{2}$  length; length of skull 15.0; beak 6.9; width at notch 4.9.

The *Delphinus globiceps* (Grant, *Proc. Zool. Soc.* 1833, 65), brought by Capt. Delvitte from the North Pacific, which Schlegel thought might be this species, is a species of *Orca*.

#### 5. GLOBIOCEPHALUS MACRORHYNCHUS. The SOUTH-SEA BLACK-FISH.

Uniform black. Nose of skull short and broad, rounded in front, nearly as broad in the middle as at the preorbital notch. Teeth subcylindrical,  $\frac{1}{2}$ . Lower jaw rounded in front. Length 16, rarely 20 feet.

Killer or Blackfish, J. Bennett, *MSS. Mus. Col. Surg.*

Black-fish of South Sea Whalers, *Phocæna*, sp. Bennett, *Whaling Voyage*, ii. 233, fig.

Black-fish, *Phocæna nigra*, Clarke in Nunn, *Narrat. of Wreck of Favourite*, 184, fig. (1850, 8vo).

*Globiocephalus macrorhynchus*, Gray, *Zool. Ereb. & Terror*, 33.

Black-fish, Colnett, *Voy. S. Pacific*.

Inhab. South Seas. Skull, Mus. Col. Surg. Presented by J. Bennett, Esq.

	in.	lin.
Skull: Length, entire .....	24	0
„ nose .....	11	6
„ from tip of nose to back of palate .....	14	6
„ teeth line .....	5	6
„ lower jaw .....	16	6
Breadth at preorbital notch .....	9	6
„ at middle of nose .....	9	0
„ at temple .....	17	0
„ of intermaxillary .....	6	0

Head thick, square, and short; the snout blunt and but little prominent. The angles of the lips are curved upwards, giving the physiognomy an innocent smiling expression. Body clumsy, round and broad, and the termination of the trunk in the tail-fin rather abrupt.—*Bennett, l. c.* 233.

Colnett (*Voy. S. Pacific*) speaks of innumerable shoals of Black-fish on the shores of California.

The contents of the stomach were chiefly cuttle-fish.

The *Black-fish* roam about the ocean in very large troops—a solitary individual is occasionally seen—are active and watchful, but betray little concern at ships or boats. They appear to inhabit the greater portion of the aqueous globe, uninfluenced by the remoteness or vicinity of land. We observed examples in many parallels of latitude between the equator and 50° N. and 53° S., in the central part of the Atlantic and Pacific Oceans, as well as off the coast of California and in the Indian Archipelago.

Sperm whalers often attack this species with their boats in order to obtain a supply of oil for ship consumption; some risk however attends their capture, for when harpooned they will sometimes leap into a boat. A Black-fish of average size will produce from 30 to 35 gallons of oil, which in its most recent state has a dark colour and an unpleasant odour.—*Bennett, 235.*

It is probable that Mr. Bennett in the above range confounded together under the name of *Black-fish* more than one species.

#### \* *Doubtful Species.*

? *Delphinus feres, Bonnat. Cetac. 27.*

Blackish; teeth  $\frac{1}{8}$ , large and small, curved, compressed before and behind; crown oval, rounded and divided into two lobes by a groove which extends their whole length.

Inhab. Mediterranean, Malta.

Length 14 feet. Skull: length 1 foot 10 inches, breadth 1 foot

5 inches; length of teeth 1 inch, breadth of line  $\frac{1}{2}$  inch. Cuvier thinks this is probably *Orca gladiator*.

#### 10. ORCA.

Teeth conical, acute, large, occupying the whole edge nearly to the notch, permanent. Dorsal fin high, falcate, in the middle of the back. Pectoral broad, ovate.

Skull rounded; the hinder wing of the maxilla horizontally spread over the orbits, the intermaxillaries only half the width of the jaw-bones; forehead flattened. Palate convex.

*Orca, Rondel, Pisc.; Gray, Zool. Ereb. & Terror, 33, 1846.*

*Phocæna, sp., Wagler, N. S. Amph. 34.*

*Delphinus, sp., Linn.; Illiger, Prod. 143, 1811.*

*Grampus, pars, Gray, Spic. Zool. 2, 1828.*

*Delphinus Orca, Linn. S. Nat. i. 108, is evidently from Orca, Belon, Pisc. 18, Rond. Pisc. 483, fig.—, copied by Gesner, Aquat. 748. In the Mantissa, ii. 523, the reference to the Schwerdtfische of Anderson and some other whalers is added, and probably from them is taken the following note: "Bellum gerit cum Phocis, quas ope gladii dorsalis e lapidibus detrudit; Balænarum Phocarumque tyrannus, qua turmatim adgreditur. Pinna dorsalis est apina ensiformis, sex pedalis, cute vestita, basi latior."—Mant. ii. 523. Bonnaterre gave the name of *Delphinus gladiator* to Anderson's figure, which represents the dorsal fin as situated near the nape.*

Cuvier believed that the *Orca* of the ancients was probably a Cachalot, and that the Killer is the *Aries marinus* of Pliny, Ælian and the Latins, who compared the white streak behind the eye to a horn. Desmarest, *Mam.* 515, confines the name *Delphinus Orca* to the animal intended by the ancients, and characterizes it—"Museum conformé comme celui de Dauphin vulgaire; dents larges et crenulées sur leurs bords," being a translation of Arædi (*Gen. Piscium*, 76, 3), "D. rostro sursum repando, dentibus latis serratis."

O. Fabricius observes that he never saw *D. Orca*; but Prof. Eachricht believes the *Physeter microps* of O. Fabricius to be the Killer, or *D. Orca* of Linnæus (*Dan. Trans. xii.*).

#### 1. ORCA GLADIATOR. THE KILLER.

Black; circumscribed spot behind eye, spot on belly and under side of tail white. Nose of skull nearly twice as long as the width of the notch. Teeth  $\ddagger\ddagger$ , large, conical, slightly hooked.

De Balænis minoribus in utraque maxilla dentatis qu. Orcæ vocantur, *Sibbald, Phal. 6. t. 2, f. 3, tooth.*

- Delphinus Orca*, *Linn. Mant. Plant.* ii. 523; *S. N.* i. 108; *Schreb. Saugth.* t. 340; *Fischer, Syn. Man.* 511; *Mag. Nat. Hist.* iv. 329. fig. 2; *Schlegel, Abh.* ii. t. 7, 8, from life.
- Grampus*, *Hunter, Phil. Trans.* 1787, t. 16, cop. *Bell, Brit. Anim.* fig. at p. ; *Bonnat. Cetac.* t. 12. f. 1.
- Cachalot d'Anderson, Duhamel.*
- D. Duhamelii*, *Lacep. Pisc.* 314. t. 9. f. 1, good.
- Phocæna Orca*, *Wagler, N. S. Amph.* 34.
- ? *Delphinus gladiator*, *Bonnat. Cet.* 23; *Lacep. Cetac.* 302. t. 5. f. 3.
- D. Grampus*, *Desm. N. Dict. H. N.* ix. 168; *Mamm.* 517, from *Hunter*.
- D. Grampus* (The Large Grampus), *Owen, Cat. Mus. Coll. Surg.* n. 1136.
- Phocæna gladiator*, *Lesson, Man.* 414.
- Phocæna Grampus*, *Lesson, Man.* 415.
- Orca*, *Rondel, Pisc.* 483. fig.; *Gesner, Aquat.* 748. fig. from *Rondel*.
- Grampus*, *Shaw, Zool.* ii. 513. t. 232, lower fig.
- ? *Aguluck, Pallas, Zool. Ross. Asiat.* 305.
- ? *Aguluch, Chamisso, Nov. Act. Acad. Nat. Cur.* xii. 262. t. 20. f. 9?
- ANAT. Cur. Oss. Foss.* v. t. 22. f. 3, 4; *R. A.* i. 289.
- Inhab. North Sea.

- a. Skull. Coast of Essex. From Mr. Cross's Collection.
- b. Skeleton 20 feet long. From Weymouth. Presented by R. Pearce, Esq.
- c. Skull. From Mr. Turner's Collection.

There is a skull in Mr. Bell's museum, from a male 19 feet long, taken in Lynn Harbour, Nov. 1830. The animal was described in *Loudon's Mag. Nat. Hist.* v. The following are the measurements of this specimen:—

	ft.	in.
Length along curve. . . . .	21	3
„ straight . . . . .	19	0
„ to dorsal fin . . . .	8	2
„ to pectoral fin . . .	4	0
Height of dorsal . . . . .	4	0
„ to dorsal . . . . .	13	1
Length of dorsal . . . . .	2	4
„ of pectoral . . . . .	4	0
Breadth of pectoral . . . .	2	8

The following are the measurements of two skulls; No. 1, the specimen a, from Essex, in the British Museum, and No. 2, specimen No. 1136 in the Museum of the College of Surgeons:—

	No. 1.	No. 2.
	in.	in.
Skull: Length, entire .....	33	41 $\frac{1}{2}$
" of nose .....	19 $\frac{1}{2}$	22 $\frac{1}{2}$
" of teeth line .....	14 $\frac{1}{2}$	20
" of lower jaw .....	27 $\frac{1}{2}$	35
Breadth at notch .....	10 $\frac{1}{2}$	14
" at orbit .....	18	
" at temple .....	18	
" at middle of beak....	9 $\frac{1}{2}$	
" of intermaxillary ....		
" in front .....	4	6
" in middle .....	3 $\frac{1}{2}$	3 $\frac{1}{2}$

The skull, n. 1136, of the Museum of the College of Surgeons (called the Large Grampus, *D. Grampus* in the catalogue), is of most colossal size. It formed part of the Hunterian collection, and is probably the skull of the large specimen, 31 feet long, killed at Greenwich in 1793.—*Banks in Lacepède*. It has teeth  $\frac{1}{2}$ , very large, nearly to the notch. Intermaxillary rather dilated, broader over the front of the nose.

Fabricius says, "The *Aidluit* has in the lower jaw 22 teeth, 11 on each side, arched, falciform, hollow internally as far as the point, projecting scarcely a third part (and this visible part is enamelled, compressed-conical, with the point sharp, curved inwardly and at the same time verging a little backwards; but the concealed part broader and having two parts, compressed anteriorly and posteriorly, and especially on the side nearest the throat, channeled); of the length of a finger, and 1 $\frac{1}{4}$  inch broad, the middle ones larger, the anterior and posterior smaller. Beak rather obtuse. Beside the pectoral fins it has a long, erect dorsal fin. In size it is to be considered as amongst the smaller whales. Skin glabrous, black; the fat thick, but little oily; flesh red."—*Fabricius, Faun. Grænl.*

Of the *Aidluit* wonderful stories are told: the following is not the most extraordinary. "Where these appear all the seals disappear, else they make desperate slaughter among them, for they have such sagacity and skill in catching them with the mouth and fins, that they are sometimes seen loaded with five at a time, one in the mouth, a couple under each fin and one under the back fin."—*Crantz, Greenland*, i. 116.

## 2. ORCA CRASSIDENS. The LINCOLNSHIRE KILLER.

Intermaxillaries rugose in front. Teeth  $\frac{1}{8}$ , large, conical, rather acute (all but the front lower false), near to the preorbital

notch. Lower jaw very depressed and broad in front at the symphysis.

*Phocæna crassidens*, Owen, *Brit. Fossil Mam.* 516. f. 213, 214, 216.

*Orca crassidens*, Gray, *Zool. Erebus & Terror*, 33.

Inhab. Fens of Lincolnshire. Fossil skull in Mus. Stamford (now Mus. Coll. Surg.?), of the following measurements:—

		in.	lin.
Skull: Length, entire	23 or 24	0	
„ nose	12	6	
„ teeth line	10	0	
„ lower jaw	21	0	
Breadth at notch	8	6	
„ at middle of beak	8	0	
„ of intermaxillaries	5	6	

In the figure the beak is  $1\frac{1}{4}$  the length of the base at the notch, and exactly the length of the skull.

### 3. ORCA CAPENSIS. The CAPE KILLER.

Skull flattish above, rather concave in the middle before the blow-hole. Nose rather convex on the side, rather tapering in front. Teeth  $\frac{1}{2}$ , very large, thick, nearly to the preorbital notch, concave on each side, for the reception of the teeth of the opposite jaw, the front upper small, acute, front lower large, worn down, rounded. Intermaxillaries rather dilated, and broader over the front of the nose, contracted behind.

*Delphinus globiceps*, Owen, *Cat. Mus. Coll. Surg.* 165. n. 1139;

*Grant, Proc. Zool. Soc.* 1833, 65.

*D. Orca*, Owen, *Brit. Fossil Mam.* 516; *Eydoux, Mus. Paris.*

*Orca Capensis*, Gray, *Zool. Erebus & Terror*, 34. t. 9, skull.

*Grampus*, Bennett, *Whaling Voyage*, ii. 239.

Inhab. Southern Ocean. Cape of Good Hope, *M. Vilete* (1818),

Mus. Coll. Surg. n. 1139. Northern Pacific Ocean, *Capt. Del-*

*vitte, R.N. Chili, Eydoux, Mus. Paris.*

a. Skull. Northern Pacific Ocean. Presented by the Zoological Society of London. The specimen figured in the *Voyage of the Erebus & Terror*, fig. 9. p. 34.

The following are the measurements, first, of the specimen n. 1139 in the Museum of the College of Surgeons, and secondly, of the skull in the British Museum:—

	in.	lin.	in.	lin.
Skull: Length, entire	37	0	36	6
„ of nose	18	0	18	0
„ of teeth line	14	6	14	6

	in.	lin.	in.	lin.
Length of lower jaw.....	29	6	29	6
Breadth at notch .....	12	6	12	0
„ at orbit .....	21	0	21	0
„ at temple above ..	20	0	20	0
„ at middle of beak	10	0	10	0
„ of intermaxillaries	3	9	3	6
„ in front .....	4	6	4	6
„ in middle .....	3	3	3	3

The skull in the College of Surgeons appears to be the one which Mr. Owen gives the measurement of as *D. Orca*, in his account of *Phocæna crassidens* in the British Fossil Mammalia.

The Grampus of the South Sea whalers is very frequently noticed in the Pacific Ocean, from the Equator to 44° N. and 10° S. latitude. They occur in herds, and their appearance is supposed to indicate the resorts of the Cachalots. Whether this whale is identical with the Grampus (*Phocæna Orca*) of the North Sea may be fairly questioned; but should it prove to be so, the geographic range of the latter species must be indeed extensive.—*Bennett, Whaling Voyage*, ii. 238.

Mr. Bennett mentions a *Killer* which appears in small bands, chiefly in the vicinity of the Equator, of a moderate size, spout much like the Cachalot, and has a tall erect dorsal fin.—*Bennett, l. c.* 239.

#### 4. ORCA INTERMEDIA. SMALL KILLER.

Nose of skull half the entire length. Teeth ††, long, conical.

*Delphinus intermedius*, Gray, *Ann. Phil.* 1827, 396, not Harlan.

*Orca intermedia*, Gray, *Zool. E. & T.* 34. t. 8, skull.

*Grampus intermedius*, Gray, *List Mam. B. M.* 104.

a. Skull —? The specimen described in *Annals of Phil.* and described and figured in the *Voyage of the Erebus and Terror*. The following are its measurements:—

	in.	lin.
Skull: Length, entire .....	14	0
„ of nose .....	7	0
„ of teeth line .....	5	6
„ of lower jaw .....	11	0
Breadth at orbits .....	8	3
„ at notch .....	4	6
„ at middle of beak ..	0	9

This skull, which has all the appearance of being that of a full-grown animal, is just one quarter the length and breadth of the skull of the common Killer (*Orca gladiator*).



**\*\* Head beaked. Nose of skull longer than the brain-cavity.**

# 11. LAGENORHYNCHUS, Gray.

Head rather convex, gradually sloping into the beak in front. Beak short, tapering in front. Lower jaw rather longest. Body elongate, tapering behind, largest at the pectoral fins. Pectoral fins rather far back, rather elongate and slightly falcate. Dorsal fin high, falcate, rather behind the middle of the back. The back with a low, rounded, fin-like ridge near the tail. Tail-lobes rather narrow, elongate. Skull rather depressed, the hinder ends of the maxillary bones expanded, horizontal, and rather thickened on the edge. The nose is short, broad, flat above and rather narrowed in front, and scarcely longer than the length of the brain-cavity. The triangle in front of the blowers is elongate, and reaches beyond the middle of the nose of the skull, and the intermaxillaries are separated by a deep groove filled with cartilage.

*Lagenorhynchus*, Gray, *Zool. Erebus & Terror*, 34, 1846.

*Grampus*, pars, Gray, *Spic. Zool.* 2, 1828.

*Delphinus*, sp., *Brightwell, Ann. & Mag. N. H.* 1846.

This genus is easily known from *Delphinus* by the lowness of the forehead, the short and depressed form of the beak, the posterior position of the dorsal fin, the body being attenuated behind; and by the breadth, and flat, expanded form of the nose of the skull.

The *os hyoides* of *L. leucopleurus* is large and broad.

† *Beak very short; nose of skull only as long as head; teeth nearly to the notch.*

## 1. LAGENORHYNCHUS LEUCOPLEURUS. WHITE-SIDED BOTTLE-NOSE.

Skull: brain-cavity large, high at the top behind the blow-hole; nose nearly as long as the brain-cavity, gradually and regularly tapering on each side; triangle in front of the blower flattened and concave behind, with a slightly-raised, lozenge-shaped space in the front half.

Above bluish black, beneath white, with a large, oblique, grey or white longitudinal streak on hinder part of each side. Teeth  $\frac{3}{8}$ , small, acute, curved.

*Delphinus Tursio*, Knox, *Cat. Prepar. Whale*, 29, 1838.

*Delphinus leucopleurus*, Rasch, *Mag. Zool.* 1843, 369; Nilsson, *Skand. Fauna*, i. 598.

*Lagenorhynchus leucopleurus*, Gray, *Zool. Erebus and Terror*, 34. t. 3, foetus; t. 12, skull; t. 26. f. 3, tongue.  
 Inhab. North Sea. Orkney, Knox, 1835. Gulf of Christiania, 1843.

a. Skeleton. Greenland. From Mr. Brandt's Collection.  
 The specimen figured in the *Voyage of the Erebus and Terror*.

b. Foetus. North Sea. From Mr. Brandt's Collection.

The foetus has six bristles on each of the upper lips, the hinder one being rather farther from the rest than the others are apart, which are equally placed, and of the same size. The tongue (tab. 26. f. 3) is flat on the top and as wide as the space between the sides of the jaws, with a regular sharp denticulated edge on each side, and with a rather larger, conical, separate tubercle in front. The teeth are not developed through the gums. The nose is nearly  $\frac{1}{2}$  the length of the distance between the end of the nose and the eye. The hinder part of the back has a rather thick convexity, like a long, low, rounded, second dorsal fin just before the tail; the same part of the foetus of *Delphinus* (*Delphis*?) and *Steno? fuscus* has the part very much compressed, and fined off to a very thin, knife-like edge.

c. Skeleton. North Sea. From Mr. Brandt's Collection.

The skull is at once known from the skull of the *L. albirostris*, at Norwich, by being smaller and the nose rather narrower, and especially by the hinder part of the intermaxillaries, which form the triangle in front of the blower, being flattened and concave instead of swollen and convex. Length, entire, 16; of nose,  $8\frac{1}{2}$ ; of lower jaw, 13 inches. Breadth at orbit,  $8\frac{1}{2}$ ; at notch, 4; at middle of beak,  $2\frac{1}{4}$  inches.

Mr. Knox gives the following description and measurement of a female sent from the Orkneys in May 1835. It weighed 14 stone. Length along margin from snout to centre of tail,  $77\frac{1}{2}$  inches; circumference, anterior, to dorsal fluke,  $38\frac{1}{2}$ ; length of pectoral extremity free, 10; breadth from tip to tip of tail, 14; length from snout to angle of mouth, 9; greatest possible gape,  $3\frac{1}{2}$  inches. Length of cranium, 15; of spinal column,  $55\frac{1}{2}=70\frac{1}{2}$  inches. Weight of skeleton,  $7\frac{1}{4}$  lbs. Teeth,  $\frac{3}{8}-\frac{3}{8}=120$ . Vertebrae 81: cervical 7; dorsal 15; posterior 59. V-shaped bones commencing between the fortieth and forty-first vertebra; pelvis rudimentary, consisting of two cylindrical bones; pelvis extremities not developed. The external opening of the nostrils near the vertex of the head was crescent-shaped, and placed transversely; the dorsal fluke was midway between the snout and tail.—Knox.

The skeleton of this specimen is now in the Museum of the

University of Edinburgh. The first, second and third cervical vertebrae are united by the spinous processes, the second and rest are thin. The palate smooth, not grooved. Length of skull,  $15\frac{1}{4}$  inches; of nose,  $7\frac{1}{4}$ ; of lower jaw, 10 inches. Width of skull at notch,  $8\frac{1}{2}$ ; at orbit, 8; at middle of beak, 3 inches. Nose of skull twice as long as the width at notch. Intermaxillars narrowed in front; the skull has two large foramina on the flat part of the temple on each side, instead of the single one in the skull from Christiania.

†† *Beak moderate; nose of skull only as long as head; teeth not quite to the notch.*

## 2. LAGENORHYNCHUS ALBIROSTRIS. WHITE-BEAKED BOTTLE-NOSE.

Upper part and sides very rich deep-velvet black; external cuticle soft and silky, so thin and delicate as to be easily rubbed off; nose, a well-defined line above upper jaw, the whole under jaw and belly cream-colour, varied with chalky white; fins and tail black; teeth  $\frac{1}{4}$ , small, curved; jaws moderately elongate, lower rather the longest; blow-hole horseshoe-shaped and convex towards the head; nose of skull as long as the head cavity, gradually and evenly tapering to a rather rounded point in front, the edge rather reflexed on each side behind; the triangle in front of the blower convex and swollen on each side behind, smooth in front.

*Delphinus Tursio*, *Brightwell, Ann. Nat. Hist.* 1846, 21. t. 1<sup>o</sup> ♀.

*Delphinus albirostris*, *Gray, Ann. & Mag. N. H.* 1846.

*Lagenorhynchus albirostris*, *Gray, Zool. Erebus and Terror*, t. 10, animal, from *Brightwell's drawing* t. 11, skull, 1846.

*Delphinus pseudotursio*, *Reichenb. Cetac.* t. 24. f. 7, 6 cop. *Brightwell*.

*Delphinus Ibsenii*, *Eschricht, Undersøgelser over Hvaldyrene 5te Aft.* 73; och d. Ss. föredrag vid Natuforsk. mötet. i Köpenh. 1847; *Nilsson, Skand. Fauna*, i. 600.

Inhab. North Sea, coast of Norfolk, *Brightwell*, 1846.

a. Skeleton. Yarmouth. Skull figured in *Voyage of H.M.S. Erebus and Terror*, tab. 11. p. 35. Mr. *Brightwell's* specimen.

b. Stuffed skin of a. Yarmouth.

c. Skeleton. England? Mr. *Stevens's* Collection.

Measurements of specimen from Yarmouth:—

	in.	lin.
Animal: Length, entire .....	(?)	
„ of mouth .....	9	6
„ of nose to eye .....	13	0
	E	2

	in.	lin.
Length to pectorals .....	20	0
„ of pectoral .....	15	0
„ to dorsal .....	41	0
„ of dorsal .....	11	6
Height of dorsal .....	10	0
Width of tail .....	22	0
Skull : Length, entire .....	18	0
„ of nose .....	8	6
Width at orbit .....	9	5
„ at notches .....	5	6
„ of middle of beak ....	3	6
„ of lower jaw at condyles	8	0

††† *Nose of skull longer than the length of the brain-cavity ;  
teeth-line some distance from the notch.*

### 3. LAGENORHYNCHUS ELECTRA. The ELECTRA.

Skull rather depressed ; nose flattened above, expanded and reflexed on the side behind, rather shelving in front ; sides rather contracted in the middle, rather longer than the head, and  $1\frac{1}{2}$  the length of the width at the notch ; intermaxillary broad, flattened, nearly  $\frac{3}{4}$  of the width, with a large, wide groove for the greater part of its length ; triangle flat, rather concave behind, with a lozenge-shaped, rather raised, rugose space in the front half ; teeth  $\frac{3}{4}$ , rather small, cylindrical, conical, slightly curved, acute, four in an inch ; the lower jaw regularly converging, straight on the sides in front, rather swollen behind, and shortly obliquely truncated in front, the gonyx rather produced.

*Lagenorhynchus Electra*, Gray, *Zool. Erebus and Terror*, 35.  
t. 13, skull.

Inhab. — ?

a. Skull — ? Purchased.

The specimen figured in the *Voyage of the Erebus and Terror*.

Skull : length, entire,  $17\frac{1}{2}$  inches ; of head,  $8\frac{1}{2}$  ; of nose,  $9\frac{1}{4}$  ; of teeth line, 7 ; of lower jaw,  $14\frac{1}{4}$  ; width of temple,  $10\frac{1}{2}$  inches ; at notch,  $5\frac{1}{2}$  ; at middle of beak, 4 ; of intermaxillary,  $2\frac{1}{4}$ .

This skull is very like the former, but it is considerably larger, and the nose is longer in proportion, and the head is much more depressed in the middle and spread out on the sides.

### 4. LAGENORHYNCHUS CÆRULEO-ALBUS.

Teeth  $\frac{4}{8}$  ; white, back bluish, with oblique streaks on the sides, belly white.

*Delphinus caeruleo-albus*, *Meyen, Act. Nat. Cur.* xvi. 609. t. 43. f. 2; *Gray, Zool. E. & T.* 42; *Reichenb. Cetac. Anat.* t. 19, skull.

Inhab. East coast of South America, Rio de la Plata.

Length 5 feet 6 inches. Skeleton in Mus. Anat. Mus. Berlin.

Skull: beak  $\frac{1}{2}$  longer than the length of the brain-cavity, and rather longer than double the width of the skull at the notch; teeth to the notch: see *fig. Reichenb.*

#### 5. LAGENORHYNCHUS ASIA. The ASIA.

Skull: nose rather depressed, broad, flattened, rather contracted in the middle of each side; triangle concave, with a slightly raised, flat, rugose space in the front half; teeth  $\frac{3}{4}$ , small.

*Lagenorhynchus Asia*, *Gray, Zool. Ereb. & Terror*, t. 14, skull.

Inhab. — ?

a. Skull. Teeth wanting.

The specimen figured in the *Voyage of the Erebus and Terror*, t. 14.

The skull, which is without teeth, very much resembles in the depressed and expanded form of the brain-cavity and shape of the beak, the skull of *L. Electra*, but it differs from it in the beak being rather more acute in front and more contracted on the middle of the sides, and in being rather smaller in size. It may only be a variety of that species. It measures as follows:—

Skull: Length, entire. . . . .	16 $\frac{1}{2}$ inches.
„ of nose . . . . .	9 „
„ of lower jaw . . . . .	12 $\frac{1}{2}$ „
Width at orbit . . . . .	8 $\frac{1}{2}$ „
„ at notch . . . . .	4 $\frac{3}{4}$ „
„ middle of beak . . . . .	3 $\frac{1}{2}$ „

#### 6. LAGENORHYNCHUS ACUTUS. ESCHRICHT'S DOLPHIN.

Body — ?

Teeth  $\frac{3}{4}$ ; nose of skull half its length and nearly twice as long as wide at the notch; lower jaw obliquely truncated in front.

*Delphinus (Grampus) acutus*, *Gray, Spic. Zool.* 2, 1828, from a skull; *Fischer, Syn. Mam.* 656.

*D. Eschrichtii*, *Schlegel, Abh.* 23. t. 1 & 2. f. 4, t. 4. f. 5.

*Delphinus leucopleurus*, var. *Nilsson, Skand. Fauna*, i. 598.

*Lagenorhynchus acutus*, *Gray, Zool. E. & T.* 36.

Inhab. North Sea, Faroe Islands, *Eschricht*.

Skulls and skeleton in the Leyden Museum :—Length, entire, 7 in. 2 lin.; of skull 16 lines.

This species was first described by me from a skull in Brooke's Museum, which is now at Leyden, and M. Schlegel has described and figured a skull from a skeleton sent from the Faroe Islands. It differs from the other species of the genus in the nose of the skull being more slender and the teeth more numerous. The teeth series, as in *L. Electra* and *L. Asia*, do not reach to the notch which separates the beak of the skull from the brain-cavity.

Professor Eschricht informs me that the animal is very like *D. leucopleurus*, and Professor Nilsson has considered them as the same.

The skull in Mr. Brooke's collection was 15 inches long, the head 7, the beak being 8 inches, and it was  $4\frac{1}{2}$  inches wide at its base; the teeth small and slender; the beak long, attenuated, acute, convex on the sides and flat in the centre above, and with a deep central groove. The teeth  $\frac{3}{8}$ – $\frac{3}{8}$ , small, slender. The bones in front of the inner nostrils keeled.

#### 7. LAGENORHYNCHUS CLANCULUS.

Skull wide and rather high behind. Beak flat; outline wide at the base, rapidly tapering and acute in front, but rather convex on the sides; sides slightly rounded; the hinder edge near the notch only slightly turned up and rounded; triangle to near the middle of the beak. Lower jaw high behind. Teeth  $\frac{3}{8}$ , small, cylindrical, curved, rather acute at the tip; the lower front one very small. Intermaxillaries broad, hard.

*Lagenorhynchus clanculus*, Gray, *Proc. Zool. Soc.* 1849, 1; *Zool. Erebus & Terror*, t. 35, ined. Skull.

a. Skull. Pacific Ocean. From Dr. Dickie's Collection.

Length, entire .....	14 $\frac{1}{2}$ inches.
„ beak .....	7 $\frac{1}{2}$ „
„ skull .....	7 $\frac{1}{2}$ „
„ teeth-line .....	6 $\frac{1}{2}$ „
„ lower jaw .....	11 $\frac{1}{2}$ „
„ symphysis, lower jaw ....	1 $\frac{1}{2}$ „
Width at notch .....	4 $\frac{1}{2}$ „
„ orbit .....	7 $\frac{1}{2}$ „
„ middle of beak .....	2 $\frac{1}{2}$ „
„ intermaxillary in middle .	1 $\frac{1}{2}$ „
„ condyles above .....	2 $\frac{1}{2}$ „

Very peculiar for the elongation and reflexion of the beak before the notch, and the regular beveling of the sides of the beak.

8. *LAGENORHYNCHUS THICOLEA*.

Skull rather narrow behind. Beak elongate, about  $\frac{1}{2}$  longer than the length of the head, rather dilated and concave above behind, with the side edges in front of the notch elongate, keeled and turned up; the middle of the beak flat, with flat shelving sides, the shelving part being broader and forming a slight keel in front. Intermaxillaries flat, gradually tapering. Triangle to near middle of the beak, concave on the sides and keeled in the middle behind. Teeth  $\frac{1}{2}$ ? very slender, curved, elongate, conical, tapering, acute; the front one very small.

*Lagenorhynchus Thicola*, Gray, *Proc. Zool. Soc.* 1849; *Zool. Erebus & Terror*, t. 36, ined. Skull.

Inhab. West coast N. America.

a. Skull. Imperfect behind. From Dr. Dickie's Collection.

	in.	lin.
Length of skull, entire.....	14	6? (end of nose injured.)
"    beak.....	8	4
"    teeth-line.....	7	0
"    lower jaw.....	12	3 (entire.)
Width at orbits.....	7	0
"    notch.....	3	11
"    middle of beak.....	2	2
"    intermaxillary at middle	1	2
"    of condyles.....	3	0

12. *DELPHINAPTERUS*.

Head rather convex, shelving towards the nose. Nose rather produced, obscurely divided from the forehead. Dorsal fin none. Back rounded. Pectoral oblong, rather slender. Skull moderate; beak broad, depressed, tapering, rounded above; the triangle before the blower, elongate, extending nearly to the middle of the beak. Palate flat. Teeth conical, tapering, acute, curved. Symphysis of the lower jaw short.

*Delphinapterus*, Gray, *Zool. Erebus & Terror*, 35.

*Tursio*, pars, *Wagler*, *N. S. Amph.* 34.

*Delphinus*, sp. *Lacep.*

*Delphinapterus*, sp. *Blainville*, not *Lacep.*; *Lesson*, *Voy.*

1. *DELPHINAPTERUS PERONII*. PERON'S DOLPHIN.

Black; beak, pectoral fins, and under part of body white.

Teeth  $\frac{1}{2}$ — $\frac{1}{2}$ .

*Delphinus Peronii*, *Lacep. Cet.* 517; *F. Cuv. Cetac.* 164; *D'Orb. Voy. Amér. Mérid. Mamm.* t. 21. f. 5.

*Delphinapterus leucorhamphus*, *Peron, Voy. i.* 217. t. 1.

*Delphinapterus Peronii*, *Lesson, Voy. Coq. t. 9. f. 1*, bad, cop. *F. Cuvier, Cetac.* 164. t. ; *Jardine, N. Lib. t.* ; *Gray, Zool. E. & T. t. 15. f. 4.*

*Dauphin de Peron*, *Cuv. Oss. Foss. v. t. 21. f. 5, 6*, skull.

*D. bicolor*, *Stephenson, MSS. Icon. ined.* ; *Gray, Zool. E. & T. 36. t. 15. f. 1-3*, from *Stephenson's drawing*, t. 15. f. 4, from *Lesson*.

*Delphinus Peronii* or Right Whale Porpoise of the Whalers, *Bennett, Narrat. Whaling Voyage*, ii. 235, fig.

Hab. Higher Southern latitudes. Brazil Bank. Lat. 40° S. to 54° S., long. 50° W., *Bennett*. New Guinea, *Quoy*.

Skull, from *Peron*, in *Mus. Paris*. Length 18½, of beak 10, of teeth-line 8½, of lower jaw 14½. Width at orbit 9, at notch 4½, at middle of beak 2½ inches; teeth ¾, small, slender, six in an inch; beak broad, depressed, rather tapering in front, the sides spongy, the centre hollow, filled with cartilage, broader in front, flattened behind; triangle extending nearly to the middle of the length of the beak; orbit rather shelving above and slightly thickened on the edge; palate flat in front, rather convex behind, without any groove on the sides; lower jaw gradually tapering, angularly shelving and flat on the sides in front; symphysis short, not two inches.

A second skull, in *Mus. Paris*, brought by *M. Housard* in 1822, is rather more depressed in the middle in front, and with the triangle reaching near to the middle of the beak: teeth ¾; length, entire, 17.6, of beak 9.6, of lower jaw 14.6; width at notch 4.3, at middle of the beak 2.6. Orbits rather shelving above and slightly thickened on the edge.

*Cuvier* justly observes, that the beak of *Lesson's* figures (*Voy. Coq. t. 9*) is too pointed. *Lesson* also represents the black as only occupying the upper part of the back, as represented in fig. 4 of the plate t. 15 of the *Zoology of the Erebus and Terror*, copied from his plate. *M. D'Orbigny*, and *Bennett*, represent the black as down to the base of the fins, and the hinder edge of the fin as black. In the *Zoology of the Erebus and Terror*, t. 15, is given a new figure of the species, copied from a drawing, ⅓ the natural length, communicated by *W. Wilson Saunders, Esq.*, of *Lloyd's*, which was made by *Dr. Stephenson*, during the voyage of the ship *Glenarn*, *Capt. Guy*, in lat. 46° 48' S., long. 142° W., Jan. 12, 1844.

They live in large shoals; the flesh is esteemed a delicacy.—*Bennett*, ii. 237.



## 2. DELPHINAPTERUS BOREALIS.

Elongate, snout slightly protruding; black, with a white lanceolate spot on the breast, which is extended in a narrow line to the tail.

*Delphinapterus borealis*, T. Peale, *U. S. Exp. Exped.* 35 (t. 8. f. 2. ined.).

Hab. North Pacific Ocean, lat.  $46^{\circ} 6'$ , long.  $134^{\circ} 5' W.$ —Peale.

## 13. DELPHINUS.

Forehead rounded. Nose produced, bald. Dorsal fin falcate, in the middle of the back. Skull with the hinder wings of maxilla horizontal, sometimes thickened on the edge over the orbit; nose elongate, tapering, depressed, broader than high, convex, roundish above, and slightly concave in front of the blowers, nearly parallel on the sides and rounded in front. Teeth small, conical, extending the greater part of the length of the jaw.

*Delphinus*, Gray, *Spic. Zool.* 1, 1828; *Zool. Erebus & Terror*, 36, 1847; *Wagler*, *N. S. Amph.* 35.

*Delphinus*, pars, *Linn.*; *Illiger*, 143, 1811.

*Delphinorhynchus*, pars, *Lesson*.

*Grampus*, sp. *Gray, Spic. Zool.* 2, 1828.

*Cephalorhynchus*, sp., *F. Cuvier, Cetac.*

Most maritime persons call these animals *Bottle-noses*, *Bottle-heads*, *Flounder-heads*, *Grampuses*, *Porpoises*, *Porpesses*, or *Porpusses*, sometimes adding *Whale* to the name. They generally confine the name of *Dolphin* (most used by landmen) to the Scomberoid fish (*Coryphæna*), which changes colour in dying.

In the British Museum there is a fœtus, apparently belonging to the *Delphinus Delphis*, figured in the *Zoology of the Erebus and Terror*, t. 26, with its tongue in detail; it formed part of the collection of Sir Hans Sloane. It differs from the fœtus of *Lagenorhynchus acutus* in the nose being more produced (nearly  $\frac{1}{2}$  the length of the distance from the end of the nose to the eye); it has seven black rigid bristles on each side; the two front, rather the largest, are on the side of the upper part of the nose, the five hinder forming a descending line nearly parallel to the groove which separates the beak. The tongue is convex on the sides, with a rather narrow flat space on the hinder part, separated from the under sides by a sharp entire edge; the front is rather dilated, sharp-edged and obscurely crenated.

## SECTION OF GENERA.

a. Head shortly beaked. Nose of skull moderate. Triangle on hinder part of beak elongate, produced before the teeth-line. Palate flat. Teeth  $\frac{1}{4}$ – $\frac{1}{8}$ .

† Beak scarcely produced. Nose of skull rather depressed, scarcely longer than the brain-cavity. Teeth  $\frac{1}{4}$ – $\frac{1}{8}$ . Species No. 1–3.

†† Beak short. Nose of skull thick, conical, convex above, half as long as the head.

\* Beak of skull rather thick, and rather swollen on the sides. No. 4–7.

\*\* Beak of skull rather thick, conical, evenly tapering. No. 8–9.

\*\*\* Beak of skull slender, subcylindrical. No. 10–11.

b. Head longly beaked. Nose of skull slender, light, rather depressed, especially in front, much longer than the head. Teeth  $\frac{1}{8}$ – $\frac{1}{4}$ .

\* Skull flattened behind. Triangle to the teeth-line. Palate flat, not grooved on the side. No. 12–15.

\*\* Skull roundish. Triangle just to the teeth-line. Palate with a deep groove on each side and a high central ridge behind.

† Beak moderate,  $1\frac{1}{2}$  the length of the brain-cavity. Teeth  $\frac{1}{4}$  or  $\frac{1}{8}$ . No. 16–20.

†† Beak of skull twice as long as the brain-cavity. Teeth  $\frac{1}{4}$ – $\frac{1}{8}$ . No. 21.

\*\*\* Skull round. Triangle not reaching to the teeth-line. Palate convex, with a very concave line on the hinder part of each side. Beak twice as long as the head. Teeth  $\frac{1}{8}$ . No. 22.

a. Head shortly beaked. Nose of skull moderate. Triangle on hinder part of beak elongate, produced before the teeth-line. Palate flat. Teeth  $\frac{1}{4}$ – $\frac{1}{8}$ .

† Beak scarcely produced. Nose of skull rather depressed, scarcely longer than the brain-cavity. Teeth  $\frac{1}{4}$ – $\frac{1}{8}$ . Cephalorhynchus.

Cephalorhynchus, F. Cuvier, *Cetac.*

Grampus, pars, Gray, *Spic. Zool.* 2, 1828.

## 1. DELPHINUS HEAVISIDII. The HASTATED DOLPHIN.

Black, with a streak, and two diverging white lines beneath; teeth  $\frac{3}{4}$ ; nose of skull nearly half the length of head; lower jaw truncated in front.

*Delphinus* (*Grampus*) *Heavisidii*, *Gray, Spic. Zool.* 2. t. 2. f. 6, 1828; *Schlegel, Abh.* t. 3. f. 1-4, t. 4. f. 6.

*D. Capensis*, *Dussumier, MSS.*; *Cuv. R. A. i.* 288, not *Gray*.

*D. Dussumieri*, *Fischer, Syn. Mam.* 656.

*D. Cephalorhynchus*, *F. Cuv. Cetac.* 158.

Marsouin du Cap, *F. Cuv. Mam. Lith.* 3.

*D. hastatus*, *F. Cuv. Cetac.* 161; *Rapp. Cet.* t. 3.

*Phocæna Homei*, *A. Smith, Zool. Journ.* xvi; *Bull. Sci. Nat.* xviii. 276.

*D. tridens*, *A. Smith.*

*Delphinus Homei*, *Fischer, Syn. Mam.* 656.

*Grampus Heavisidii*, *Gray, Cat. Mam. B. M.* 134.

*D. Phocænoides*, *Fischer, Syn.* 657.

Inhab. South Sea, Cape of Good Hope.

a. Stuffed skin. Cape of Good Hope. Presented by the Council of the College of Surgeons.

The specimen described and figured by Gray, Quoy, and A. Smith.

M. Quoy's description and figure, on which F. Cuvier founded *D. hastatus*, are from the specimen originally described by me, and now transferred from the College of Surgeons to the British Museum.

There is a skull, marked *D. Cephalorhynchus*, in the Paris Museum. Beak flat; palate flat, rather concave behind; teeth rather blunt,  $\frac{3}{4}$ ; orbits rather shelving; symphysis of the lower jaw very short, rather keeled below. Length,  $11\frac{1}{2}$ ; beak,  $4\frac{1}{2}$ ; width at notch,  $2\frac{1}{2}$  inches.

## 2. DELPHINUS OBSCURUS. DUSKY DOLPHIN.

Black, with oblique diverging streaks on the side, and beneath whitish; teeth  $\frac{3}{4}$ - $\frac{3}{8}$ ; nose of skull about  $\frac{1}{2}$  of its length and nearly  $2\frac{1}{2}$  the length of its width at the notch; lower jaw truncated in front.

*Delphinus* (*Grampus*) *obscurus*, *Gray, Spic. Zool.* ii. t. 2. f. 2, 3; *Gray, Zool. E. & T.* 37. t. 16, skull.

*Delphinus obscurus*, *Fischer, Syn. Mam.* 656.

*D. cruciger*, *Quoy & Gaim. Voy. Uran.* t. 12. f. 3, 4, from animal in ocean; *Fischer, Syn. Mam.* 507.

*D. bivittatus*, *D'Orb. Voy. Amér. Mérid. Mam.* t. 21, animal and

skull; *Lesson, Bull. Sci. Nat.* vii. 373; *Zool. Coq.* 178. t. 9. f. 3; *Fischer, Syn. Mam.* 510.

? *Delphinus albigena*, *Quoy & Gaim.*; *Lesson, N. R. Anim.* 198.  
*D. superciliosus*, *Schlegel, Abh.* 22. t. 1, 2. f. 3. t. 4. f. 4; *Fischer, Syn. Mam.* 510.

*Phocæna superciliosa*?, *Lesson, Mam.* 415.

*D. Fitzroyii*, *Waterhouse, Zool. Beagle*, t. 10, jun.

*D. obscurus* (var.), *Quoy, Voy. Astrol.* 151. t. 28.

Dauphin à museau courte, *Voy. Pole Sud*, t. 22. f. 1.

? *D. superciliosus*, *Lesson, Voy. Coq.* t. 9. f. 2??; *F. Cuv. Cetac.* 149?

Inhab. Southern Ocean, Cape, *Heaviside*.

a, b. Skulls. Cape of Good Hope?

c. Stuffed skin. Cape of Good Hope. Presented by the Council of the College of Surgeons.

The specimen described and figured in *Spicil. Zool.*

	ft.	in.
Skull: Length, entire.....	15	0
„ of nose .....	8	0
„ of lower jaw .....	12	0
Width at orbit.....	6	6
„ at notch .....	3	9
„ at middle of beak ..	3	0
Body: Length, entire.....	5	1
„ to dorsal fin .....	2	1
Width of tail .....	1	2

The skull of this species is intermediate in form between the *Lagenorhynchus* and *Delphinus*.

M. Garnot's description of *D. bivittatus*, as given by F. Cuvier, is very short, but it appears to fit this species.

The skull, marked *Dauphin à museau court*, in the Paris Museum, has teeth  $\frac{3}{8}$ ; triangle extends much in front of the tooth-line; nasal grooves wide in front; length,  $14\frac{1}{2}$ ; beak, 8; width at notch,  $3\frac{1}{2}$  inches. It is evidently this species.

There is a skull named *D. bivittatus*, D'Orbigny, 1830, in the Paris Museum,—beak quite flat above; triangle to near the middle of the beak; length of skull, 14; of beak, 7; width at notch, 4 inches,—which appears to be only a variety of this species.

This is probably the skull of the specimen and skull figured as *D. cruciger*, D'Orb. *Voy. Amér. Mérid. Mam.* t. 21, which is represented as black, the underside from back of chin, and streak on upper part of the side from the eyes to the base of the tail white. Teeth —?

### 3. ? DELPHINUS COMPRESSICAUDA. The COMPRESSED-TAILED DOLPHIN.

Teeth  $\frac{1}{2}$ , small, conical, hooked; head coloured; belly whitish; pectoral short; upper jaw longest; nose short; base of the tail compressed on each side.

*Phocaena compressicauda*, Lesson, *Cetac.* 199; *F. Cuv. Cetac.* 186 (from *Garnot MSS.*).

Inhab. 4° S. lat., 26° E. long. of Paris.

	ft.	in.
Animal: length to pectoral.....	1	8
expansion of tail .....	1	7

†† *Beak short. Nose of skull thick, conical, convex above, half as long as the head. Tursio.*

*Tursio*, Gray, *Zool. E. & T.* 37.

*Cetus*, sp. *Brisson.*

\* *Beak of skull rather thick, and rather swollen on the sides. Teeth  $\frac{1}{2}$ – $\frac{3}{8}$ .*

### 4. DELPHINUS TURSIO. BOTTLE-NOSE DOLPHIN.

Black, whitish beneath; teeth  $\frac{1}{2}$ , truncated when old; skull-nose  $\frac{1}{2}$  of entire length; intermaxillaries very convex, forming a strong rib on each side above; intermaxilla and vomer forming part of the palate.

*Delphinus Tursio*, *O. Fab. Faun. Græc.* 49; *Wright, Mag. N. H.* ii. 609, 1838; *Bonnat. Cetol.* 21. t. 11. f. 1; *Schreb. Saugth.* t. 344; *Desm. Mam.* 514; *Fischer, Syn.* 508; *Zool. E. & T.* 37. t. 10, animal.

*Tursio truncatus*, Bottle-nose Whale, Gray, *List Mam. B. M.* 104.

*D. Orca*, Gerard, *Dict. Sci. Nat.* 75.

*D. Nesarnak*, *Lacep. Cet.* 307; *Desm. Mam.* 515, from *O. Fab.* *Delphinus truncatus*, *Montague, Wern. Trans.* iii. t. 5. f. 3, skull, cop. *Bell, B. Quad.* 472, fig.

Bottle-nose, Hunter, *Phil. Trans.* lxxxvii. t. 18, cop. *Bonnat. Cetol.* t. 11. f. 1, and *Bell, B. Quad.* 469, 1787, fig.

L'Oudre (*Orca*), *Bellon, Aquat.* f. 6. tab. at p. 18.

Dauphin vulgaire, *Camper, Cetac.* t. 35–40, skull.

Grand Dauphin, ou Souffleur, *Cuvier, R. A.* i. 278.

*ANAT. Cuvier, Oss. Foss.* v. 277. t. 21. f. 3, 4. t. 23. f. 23, 29. f. 22. f. 18; *Camper, Cetac.* t. 35–40; *Mont. Wern. Trans.* iii. t. 5.

Var.? *D. Tursio*, *Schlegel, Abh.* t. 5. f. 1, 2. t. 4. f. 9.

Inhab. North Sea.

a. Skull and teeth.

b. Skull, bad state. From Dr. Mantell's Collection.

In the *Zoology of the Erebus and Terror*, tab. 10, is a copy of a most accurate drawing, by Mr. R. Templeton, of a specimen caught on the south of Ireland, in November 1828. The following are its measurements:—

	ft.	in.	lin.
Length, entire .....	7	6	0
„ eyes .....	1	0	0
„ ear .....	1	2	5
„ pectoral .....	1	6	9
„ end of the pectoral .....	2	6	7
„ front of the dorsal .....	3	2	5
„ end of the dorsal .....	4	2	5
„ genital organ .....	5	3	0
„ to the vent .....	5	6	3
„ to base of tail .....	7	0	0
„ to end of middle of tail ..	7	6	0
„ to end of tail-fin .....	8	1	3

There is some difficulty about the colour of this species, which may arise from two being confounded under one name. Bonna-terre, Montague and Wright describe it as black above and whitish beneath; O. Fabricius as all blackish, the belly a little whiter and the young paler; Schlegel figures it of a uniform deep black colour.

The following are the measurements of five skulls, the first being Montague's specimen in the British Museum, and four in the College of Surgeons; the fourth is No. 1126, and the fifth No. 1125 of the College Catalogue:—

	in.	in.	in.	in.	in.
Length, entire .....	21½	21	21	21	22
„ of nose .....	11½	12	12	11¼	12
„ of teeth-line ....	...	9½	10	10	10½
„ of lower jaw ....	...	18½	18½	...	18
Width at notch .....	5½	5	5½	5½	5½
„ at orbit .....	10½	...	10½	10½	9½
„ at middle of beak ...	...	3½	4½	...	...

In the skull of Montague's specimen, in the British Museum, the 4th and 10th teeth from the front on each side appear by the hole to have been larger than the rest. We have a second imperfect skull of the same measurement.

The skull of the skeleton presented by Mr. Howship, in Mus. Coll. Surg. (n. 1125), taken below the Nore, in June 1828, has the teeth ¾, the two hinder upper without any opposite them; the 4th, 5th and 6th upper are largest, the middle lower are truncated;

the lower jaw obliquely truncated, with a rather prominent gonyx. The elongated intermaxilla and the vomer are visible in the palate. In the old skulls the intermaxillaries are  $\frac{1}{2}$  width above, and the sides of the maxillaries are shelving. In skull n. 1126 (Mus. Coll. Surg.) the teeth are very oblique and truncated at the end.

In all the skulls I have seen of this species the teeth are more or less worn down, but Mr. Bell says he has two skulls in which they are acute.—*Brit. Quad.* 472. M. F. Cuvier (*Cetac.* 223) complains of Montague's figure of the skull of *D. truncatus*: he does not recognize in it the *D. Tursio*, but thinks it most resembles *D. Delphis*! Hence the origin of his complaint.

A stuffed specimen and skeleton, in the Edinburgh University Museum, from the Firth of Forth, have all the teeth truncated and flat. A skeleton in the Surgeons' Hall of Edinburgh, from the same locality, has them all acute. The latter is named *D. Delphis*. The atlas (or first) and second cervical vertebræ united by the body and lateral process; the third to the seventh cervical vertebræ free.

A specimen with teeth  $\frac{1}{4}$ +, large, conical, acute, was taken in the river Orwell, May 10, 1849.

#### 5. DELPHINUS ABUSALAM. The ABUSALAM.

Black, below white, with small dark spots; teeth  $\frac{1}{4}$ — $\frac{3}{8}$ . Nose of skull about  $\frac{1}{3}$  of length,  $2\frac{1}{2}$  its width at the notch. Intermaxillary bones very convex, forming a strong ridge on each side. Lower jaw tapering in front.

*Delphinus abusalam*, Rüpp. *Mus. Senk.* 1842, t. 12. f. 1, 2, 3;  
Gray, *Zool. Erebus & Terror*, 38.  
Inhab. Red Sea.

Only known from Dr. Rüppell's description and figure. It has been said to be the same as *D. Tursio*, but it appears to be different.

*Delphinus aduncus*, *Hemp. & Ehrenb. Sym. Phys.* ii. Beak depressed, elongate; teeth  $\frac{1}{4}$ +, conical, strong. Inhab. Island of Belhosse,—is perhaps the same as the former.

#### 6. DELPHINUS EUTROPIA. The EUTROPIA.

Nose of skull rather longer than the length of the brain-cavity, rather dilated on the sides before the notch, very convex and rounded above. Triangle elongate, produced before the teeth-line, concave on the sides and strongly keeled in the centre behind; hinder edge of blow-hole rather prominent. Intermaxillaries wide, convex above, leaving a rather broad open space in front. Lower jaw thick, blunt, and rather produced beyond the

upper in front. Skull rather compressed behind. Palate rather concave in front, convex in the centre behind, and the palate keeled on each side. Teeth  $\frac{3}{4}$ , rather slender, cylindrical, conical at the top. The frontal ridge half the distance between the notch on the convexity of the condyles. Condyles large, rather oblique; foramen magnum rather wider than high.

*Delphinus Eutropia*, Gray, *Proc. Zool. Soc.* 1849, 1; *Zool. Erebus & Terror*, t. 34, ined. Skull.

a. Skull. Pacific Ocean. Chili. From Dr. Dickie's Collection.

	in.	lin.
Skull: Length, entire .....	15	0
„ from notch .....	6	10
„ beak .....	7	10
„ teeth-line .....	6	10
„ lower jaw .....	11	11
Width at notch .....	3	6
„ at orbit .....	6	5
„ at middle of beak .....	2	10
„ middle intermaxillaries ..	1	3
„ of condyle above .....	3	3
Height of each condyle .....	1	3

## 7. DELPHINUS EURYNOME. The EURYNOME.

Skull roundish; nose thick, broad, rounded above; intermaxillaries rather convex,  $\frac{1}{3}$  as wide as maxillaries; nose  $\frac{1}{3}$  longer than the length of the head (or  $4\frac{1}{7}$  of entire length), twice and  $\frac{1}{3}$  the length of the width at the notch; back of blowers largely tubercular; teeth  $\frac{3}{4}$ , moderate, cylindrical, rather curved, acute.

*D. Eurynome*, Gray, *Cat. Ost. B. M.* 143; *Zool. E. & T.* 38. t. 17, skull.

Inhab. North Sea?

a. Skull. Figured *Voy. E. & T.* t. 17.

	in.	lin.
Skull: Length, entire .....	22	0
„ of head .....	9	1
„ of nose .....	12	3
„ of teeth-line ....	10	0
„ of lower jaw ....	18	0
Width at temples .....	11	0
„ at notch .....	5	4
„ at middle of beak .	3	6

The skull of this species is most like *D. Tursio*, but the nose is  $\frac{1}{4}$ th longer than the length of the head, slenderer and more rounded, and the teeth smaller.



**\*\* Beak of skull rather thick, conical, evenly tapering.**

# 8. DELPHINUS METIS. The METIS.

Skull globular; back of blower tubercular; nose thick, rather conical, regularly tapering, upper part convex, rather longer than the head and rather more than twice as long as the width at the notch; intermaxillaries convex, rather more than half the width at the beak; teeth  $\frac{3}{4}$ , rather conical, acute, curved.

*D. Metis*, Gray, *Cat. Ost. B. M.* 36; *Zool. Ereb. & Terror*, 38. t. 18, skull.

Inhab. — ?

## a. Skull.

The specimen figured in the *Voyage of the Erebus and Terror*.

	in.	lin.
Skull: Length, entire.....	21	0
„ of nose .....	11	9
„ of lower jaw ..	17	0
Breadth of orbit .....	9	6
„ notch.....	5	0
„ middle of beak	3	0

This skull is like *D. Euphrosyne*, but differs in the nose being rather shorter compared with the length of the head, more tapering, and the teeth rather larger. It differs from *D. Tursio* in the nose being much shorter and more conical and acute.

# 9. DELPHINUS CYMODOCE. The CYMODOCE.

Skull roundish; nose broad, rounded above, broad at the base, gradually tapering in front and rather convex on the sides,  $\frac{1}{4}$  longer than the head, or rather more than half the entire length and rather more than twice as long as the width at the notch; the triangular impression in front of the blower rather elongate, extended rather beyond the line of the hinder teeth; teeth  $\frac{3}{4}$ , moderate, conical, slightly incurved, acute (rather more than three in one inch); lower jaw regularly converging, straight on the sides, the front obliquely truncated, and the gonyx slightly produced.

*Delphinus Cymodoce*, Gray, *Cat. Ost. B. M.* 35; *Zool. Ereb. & Terror*, 38. t. 19.

Hab. — ?

## a. Skull — ?

The specimen figured in the *Voyage of the Erebus and Terror*, t. 19.

	in.	lin.
Skull: Length, entire.....	18	6
„ of head .....	8	6
„ of nose .....	10	0
„ of teeth-line ..	7	9
„ of lower jaw ..	15	0
Width of temple.....	8	6
„ of notch .....	4	9
„ at middle of nose	2	8
„ of intermaxillary	1	7

This skull is very like *D. Metis*, but much smaller, and the beak more conical.

\*\*\* *Beak of skull slender, subcylindrical. Teeth  $\frac{3}{8}$ — $\frac{1}{2}$ .*

#### 10. DELPHINUS DORIS. The DORIS.

Skull roundish; nose depressed,  $\frac{1}{4}$  of the entire length, and  $2\frac{1}{2}$  times the length of the width at the notch, concave behind, rounded on the sides, convex in the middle of the central ridge, flattened in front; intermaxillaries convex, especially in the middle of their length, with a groove between them in front; an irregular impression in front of the blower, rather elongate, extending a little before the line of the hinder teeth; teeth  $\frac{3}{8}$  or  $\frac{1}{2}$ , slender, conical, incurved, acute; lower jaw slender, very obliquely truncated; palate rather convex in front, tapering, shortly grooved behind.

*D. Doris*, Gray, *Cat. Ost. B. M.* 36; *Zool. Erebus and Terror*, 39. t. 20, skull.

Hab. — ?

a. Skull — ?

The specimen figured in the *Voyage of the Erebus and Terror*, t. 20.

	in.	lin.
Skull: Length, entire .....	17	4
„ of head .....	7	3
„ of nose .....	10	1
„ of teeth-line.....	9	2
„ of lower jaw .....		
Width at temples .....	7	9
„ at nostrils .....	4	4
„ at middle of beak .....	2	4
„ at intermaxillaries .....	1	1

b. Skull. From Haslar Hospital.

c. Skull.

This species, in the slenderness and length of the beak and number of teeth, forms the passage between this and the next section.

In the Ipswich Museum there is a skull of a species allied to this, if not the same. The beak is  $2\frac{1}{2}$  times as long as wide at notch; intermaxillaries convex, solid, with an elongated lanceolate space in front; triangle elongated, about  $\frac{1}{2}$  before the end of the tooth-line, rugulose; lower jaw slender in front, slightly truncated; back of the head convex, rounded; palate flat, rather concave in the middle of the front part; teeth  $\frac{3}{4}$ .

	in.	lin.
Length, entire .....	16	0
„ of lower jaw ..	13	3
„ of beak .....	9	3
Width at notch .....	3	6
„ at orbits .....	7	9

### 11. DELPHINUS FRENATUS. The BRIDLED DOLPHIN.

Blackish, paler on the sides, the belly white, end of tail black beneath; head black; sides ashy, with a dark band from the angle of the mouth under the eye.

*Delphinus frenatus*, F. Cuv. *Mam. Lith.* t. ; *Cetac.* t. 1, 158, from *Dussumier's description and drawing*.  
Inhab. Cape de Verd.

Skull in the Paris Museum, from Cape de Verd, sent by Dussumier. Length 18.0 inches, of beak 8.3, width at notch 3.5, of middle of beak 1.11; teeth  $\frac{3}{4}$ , rather larger than *D. dubius*; palate smooth; intermaxillaries large, expanded; nasal convex beneath; triangle rather extended in front of the teeth-line, rugose, and rather more so than *D. dubius*. There is a second skull marked *D. frenatus*, No. 2: width at notch, 3.7; teeth  $\frac{3}{4}$  or  $\frac{3}{8}$ ; palate flat; nasal very convex, especially behind; triangle extending rather in front of the teeth-line, very rugose; jaws rather strongly reflexed in front of the notch.

*b. Head longly beaked. Nose of skull slender, light, rather depressed, especially in front, much longer than the head. Teeth  $\frac{3}{8}$ – $\frac{3}{4}$ . Delphinus.*

\* *Skull flattened behind; triangle to the teeth-line; palate flat, not grooved on the side.*

### 12. DELPHINUS CLYMENE.

Skull rather depressed, the hinder part slightly convex; nose rather depressed, shelving on the sides; intermaxillaries convex,

with an elongated groove between them in front,  $\frac{3}{4}$  the entire length, twice and a half the length of the width at the notch; the triangular impression in front of the blower rather elongate, produced a little beyond the line of the hinder tooth, rugose in front, with oblique grooves on each side; teeth  $\frac{1}{8}$ , small, slightly incurved, acute, six in an inch.

Delphinus Clymene, Gray, *Cat. Osteol. Spec. B. M.* 35.

*D. Metis* (no. 2), Gray, *Zool. Erebus and Terror*, 39 (not no. 1 nor figure).

Inhab. — ?

	in.	lin.
Skull: Length, entire .....	15	7
„ of head .....	6	3
„ of nose .....	9	4
„ of tooth-line .....	7	4
Width of temple .....	6	10
„ at nostril .....	3	7
„ at middle of back ....	2	2
„ of intermaxillaries ....	1	0

This species is like the *D. Doris* in size, but the skull behind the frontal ridge is much flatter, and gradually shelving to the *foramen magnum*, and the beak is more depressed.

Var. In the museum of the Bristol Institution there is an imperfect skull, apparently of this species, which differs in the nose being about  $\frac{3}{4}$  of an inch shorter, and rather narrower. It has 36 teeth in the upper jaw.

	in.	lin.
Skull: Length of nose .....	8	7
Width at notch .....	3	8
„ at middle of nose ....	2	0

A lower jaw is fitted to it, which has no teeth and a short gonyx, but it is doubtful if it belong to the same animal; its length is  $12\frac{1}{4}$ , symphysis  $1\frac{1}{4}$  inch.

A second skull in the same collection is very similar, and has  $\frac{3}{4}$  teeth.

	in.	lin.
Skull: Length, entire .....	15	0
„ of nose .....	9	0
Width at notch .....	3	4
„ at middle of nose ....	1	10

This skull only differs from the former in the lower jaw being slenderer and united by a longer symphysis in front. Lower jaw  $12\frac{1}{4}$  inches long; symphysis 2 inches.

These are probably indications of two other species. The hinder

part of the skull of the latter is also rather more convex than the same part in *D. Pherusa*.

In the description of this species in the *Zoology of the Erebus and Terror*, *D. Metis* is mentioned in three places instead of *D. Doris*.

### 13. DELPHINUS STYX. The STYX.

Skull roundish, rather flattened behind; nose rather depressed, rather convex in the middle, shelving on each side, rather longer than the head,  $\frac{4}{5}$  the entire length, nearly twice and a half as long as the width at the notch; the triangular impression just to the line of the hindermost teeth; teeth  $\frac{4}{5}$ , slender, subcylindrical, acute, about five in an inch; palate nearly flat; lower jaw rather produced and rounded in front.

*D. Styx*, Gray, *Zool. E. & T.* 40. t. 21, skull.  
Inhab. W. Africa, *Capt. W. T. W. Owen*, R.N.

Skull in Mus. United Service Institution.

	in.	lin.
Length, entire . . . . .	18	0
„ of nose . . . . .	10	3
„ of lower jaw . . . . .	14	9
Width at the notch . . . . .	4	6
„ at the orbit . . . . .	8	6
Teeth . . . . .	$\frac{4}{5}$	

This species is very like *D. Euphrosyne*, but is rather smaller and the beak rather shorter: it may prove only a variety.

### 14. DELPHINUS EUPHROSYNE. The EUPHROSYNE.

Skull round, rather flattened behind; nose rather broad and rather tapering in front, depressed, flat at the base, shelving on the sides and rounded in the middle above, about half as long again as the head, or  $\frac{2}{3}$  the entire length, and  $2\frac{1}{2}$  times the length of the width at the notch; teeth  $\frac{4}{5}$ , slender, elongate, slightly curved, acute. The intermaxillaries are convex and rounded above, with a wide groove between them for half their length in front.

*Delphinus Euphrosyne*, Gray, *Cat. Ost. Spec. B. M.* 147; *Zool.*

*Ereb. & Terror*, 40. t. 22, skull; Nilsson, *Skand. Fauna*, i. 595.

*D. Styx*, pars, Gray, *Cat. Osteol. Spec. B. M.* 38.

*D. Holböllii*, Eschricht, *Naturf. môt i Københ.* 1847, fide Nilsson.

Inhab. North Sea.

	in.	lin.
Skull, Mus. Norwich: Length, entire . . . . .	18	6
„ of head . . . . .	7	4
„ of nose . . . . .	11	3

	in.	lin.
Length of lower jaw . . . . .	16	0
„ of temple . . . . .	9	6
Width of notch . . . . .	4	6
„ at middle of beak . . . . .	2	4
„ at temples . . . . .	8	3

a. Skull imperfect behind. Specimen figured *Zool. Erebus & Terror*, t. ined.

This skull only differs from the one at Norwich in being rather smaller in all its dimensions.

	in.	lin.
Length, entire . . . . .	17	6
„ of nose . . . . .	10	3
„ of lower jaw . . . . .	14	3
Width at notch . . . . .	4	3
„ at orbit . . . . .	7	6
Teeth . . . . .	14-14	

This and the former species are very like *D. Clymene*, but are rather broader and rather more depressed; the intermaxillaries are rather more convex, especially behind, and form a regular defined front edge to the triangle, which is rough in front, and marked with oblique cross grooves; while in *D. Clymene* the triangle is furnished with an acute, raised margin on each side in front.

A skull in Mus. Coll. Surgeons (*Delphinus Delphis*, Cat. Mus. Coll. Surg. 161, n. 1117), with the palate convex, not grooved on the side; intermaxillary and vomer forming part of the palate; teeth 18. Obtained from the Leverian Museum in 1806. May be another variety.

	in.	lin.
Skull: Length, entire . . . . .	16	0
„ of nose . . . . .	10	0
„ of lower jaw . . . . .	13	3
Width at notch . . . . .	3	6

Prof. Nilsson thinks that *D. Doris* (Gray), *D. pseudodelphis* (Schlegel, *Abhand.* i. 22) and *D. dubius* (Cuvier, *Mus. Paris*) all probably belong to this species.—*Skand. Fauna*, i. 598.

## 15. DELPHINUS ALOPE. The ALOPE.

Skull moderate; beak elongate, depressed,  $1\frac{1}{2}$  time the length of the brain-cavity, rather more than three times the width at the notch; intermaxillaries convex, rounded, with a very narrow cavity between them; maxillaries spongy, shelving; triangle elongate, reaching just beyond the tooth-line, rugose. Teeth

very slender,  $\frac{4}{5}$ ; palate rather convex; lower jaw slender; gonyx keeled, short.

*Delphinus Alope*, Gray, *Zool. Erebus & Terror*, t. ined.

Hab. —?

a. Skull. —? Mr. Warwick's Collection.

Skull: length, entire,  $16\frac{1}{2}$ ; of nose,  $10\frac{1}{2}$ ; skull, 6; width at orbit, 6; at notch,  $3\frac{1}{2}$ ; at middle of beak, 2 inches.

*Doubtful species perhaps of this section.*

# 1. DELPHINUS? MICROBRACHIUM.

Dauphin à petit pectoral, *Voy. Pole Sud*, t. 21. f. 2; t. 23. f. 7, 8, not described.

Hab. South Sea?

The skull so named in the Paris Museum has the palate flat, rather convex behind; triangle extended rather in front of the teeth-line. Teeth  $\frac{3}{4}$ ; nose narrowed in front,  $\frac{1}{2}$  the length and  $2\frac{1}{2}$  times the length of the breadth at the notch; lower jaw slender in front; nasal rather high and convex. May be a *Steno*.

# 2. DELPHINUS DUBIUS.

Nose depressed, like *D. Delphis*, but rather shorter; the teeth small and sharp,  $\frac{3}{4}$ , thin, pointed.

*D. dubius*, *Cuv. R. A.* i. 288; *F. Cuv. Mam. Lith.* t. ; *Cetac.* 154; *Ann. Mus.* xix. 14.

Inhab. Coast of France.

I found three skulls under this name in the Paris Museum.

## 1. "D. dubius, *Cuv. n.* 10." *Mus. Paris.*

Skull: length 15.3, of beak 10.0, width at notch 2.9, at middle of beak 1.7; teeth  $\frac{4}{5}$  or  $\frac{1}{2}$ ; palate flat, rather convex; lower jaw flat, obliquely in front and keeled in front beneath.

## 2. "D. dubius, *Cuv. n.* 2." *Mus. Paris.*

Skull: length 16.6, of beak 10.0, of teeth-line 8.6, width at notch 3.8, at middle of beak  $1.7\frac{1}{2}$ ; teeth  $\frac{2}{3}$  or  $\frac{3}{4}$ , small, hooked; palate flat, rather convex; beak tapering in front, reflexed before the notch; intermaxillaries rather convex; triangle extending rather in front of the teeth-line, rugose in front.

## 3. "D. dubius, *Cuv. n.* 7." *Mus. Paris.*

Skull, from the Cape de Verd: length 16.0, of beak 9.4, of teeth-line 7.6, width at notch  $3.7\frac{1}{2}$ , at middle of beak 1.4; teeth

$\frac{1}{2}$ – $\frac{3}{4}$ ; triangle scarcely extended in front of the teeth-line; palate flat; lower jaw oblique, compressed and flat on the sides, rather turned up at the tip; intermaxillaries convex behind, nose tapering in front.

This last is perhaps *D. frontalis* (Dussum. Cuv. R. A. i. 288).

“Black, belly white, with a lead-coloured band from angle of mouth to pectoral.

“Inhab. Cape Verd.”

### 3. DELPHINUS LORIGER.

Lead-coloured; middle of sides, chest and belly white; lead-coloured, rather flexuous line from orbit to the lumbar region.

*Delphinus loriger*, Schreb. *Saugh.* t. 362?

*Delphinus loriger*, Wiegmann; *Reichb. Naturg. Cetac.* 12, 41. t. 16. f. 51.

Inhab. —?

\*\* Skull roundish; triangle just to the teeth-line; palate with a deep groove on each side, and a high, central ridge behind.

† Beak moderate,  $1\frac{1}{2}$  the length of the brain-cavity. Teeth  $\frac{1}{2}$ – $\frac{3}{8}$ .

### 16. DELPHINUS DELPHIS. The DOLPHIN.

Black, sides grey, beneath white; the dorsal moderate; teeth  $\frac{1}{2}$  ( $\frac{3}{8}$ , Schlegel); nose of skull half as long again as the length of the brain-cavity.

*D. vulgaris*, Lacep. *Cet.* 250. t. 14, skull.

*D. antiquorum*, Ray, *Will. Pisc.* 28. t. A 1. f. 1.

*Delphinus Delphis*, Linn. *S. N.* i. 108; Bonnat. *Cet.* 20. t. 10. f. 2; Schreb. *Saugh.* t. 343; Desm. *Mam.* 514; F. Cuv. *Cet.* 123; *Mam. Lith.* t. ; Jardine's *Whales*, t. 23, cop. *Bell's Brit. Quad.* 463. fig.; Cuvier, *Mam. Lithog.* t. ; Schlegel, *Abh.* i. 20. t. 4. f. 2, teeth; Cuvier, *Oss. Foss.* v. 275. t. 21. f. 9, 10; Gray, *Zool. E. & T.* 40. t. 26, tongue and foetus.

*D. Delphinus*, Pliny, *H. N.* ix. c. 7, 8; Bellon, *Aquat.* 7. fig.; Rondel. *Pisc.* 459. fig.; Aldrov. *Pisc.* 704. fig.; Willoughb. *Pisc.* 28. t. A 1. f. 1; Klein, *Miss. Pisc.* ii. 24. t. 3. f. a.

Dolphin, Shaw, *Zool.* ii. 507. t. 229.

Dauphin ordinaire, Cuv. R. A. i. 278.

ANAT. Cuvier, *Oss. Foss.* v. t. 21. f. 9, 10; Lacep. t. 14.

Inhab. North Sea. Atlantic Ocean.

a, b, c. Stuffed specimens. English coast. Presented by Messrs. J. and C. Grove.

? a. Skull, large.



- b.* Skull, smaller. Australia. Presented by A. Cunningham, Esq.  
*c.* Skull. St. Helena. Presented by A. Pearson, Esq.  
*d.* Skull. Presented by J. J. Bennett, Esq., F.R.S.  
*e.* to *p.* Twelve skulls.  
*q.* Skeleton. English coast.

Measurement of different skulls in the British Museum. The particular localities are unknown.

Delphinus Delphis.	Length, entire.		Length of nose.		Breadth at notch.		Breadth at the commencement of teeth.		Length of nose as compared to width at notch.	Number of teeth.
	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	
<i>a</i> ...	19	0	12	0	3	10	2	9	3 $\frac{1}{4}$	45
<i>b</i> ...	18	0	11	4	3	10	2	9	3	43
<i>c</i> ...	18	3	11	3	3	8	2	3	3 $\frac{1}{4}$	45
<i>d</i> ...	17	0	10	0	3	4	2	2	3	46
<i>e</i> ...	17	0	10	6	3	6	....	....	....	46
<i>f</i> ...	....	....	....	....	....	....	....	....	....	..
<i>g</i> ...	17	0	11	0	3	5	2	2	3	45
<i>h</i> ...	17	0	10	6	3	9	2	9	2 $\frac{1}{4}$	46
<i>i</i> ...	18	0	11	6	3	8	2	2	3	50
<i>k</i> ...	17	6	10	6	3	6	2	2	3	48
<i>l</i> ...	16	6	10	3	3	6	2	2	2 $\frac{1}{4}$	46
<i>m</i> ...	17	6	11	6	3	7	2	2	3	48
<i>n</i> ...	18	0	11	0	3	7 $\frac{1}{2}$	2	9	3	43

The most prominent difference between the specimens is in the width of the upper jaw in front of the notch, just over the commencement of the teeth-series; but there does not occur any other character in connexion with it. There is also a slight difference in the form of the palate; in *a*, the central ridge is narrow and rounded above behind; in *b*, it is broad, flat, sharp-edged, and very deeply concave on the sides, under the edges, but the different specimens vary in this particular. In *d* and *g*, the hinder part of the palate, near the entrance of the inner nostrils, is sharply keeled; and in *a* the two ridges are rounded.

I am by no means certain that with a larger series of skulls in a perfect condition, and with the animals they belonged to, it might not prove that there are more than one species amongst these skulls.

In all these skulls the intermaxillaries are seen below, forming

F

a slender, elongated, triangular space in the front of the palate and in some the vomer is also more or less seen in the middle of the palate; but the absence and presence of this bone in the palate, which Mr. Owen appears to regard as important in the distinction of species (see 'British Fossils,' p. 518), is of very little consequence, at least in this kind.

Cuvier (*Oss. Foss.* v. 303) described the cervical vertebræ as fused into a single piece, yet in *Anat. Comp.* i. 105, he states that in the *Dolphins* the atlas and axis only are united, the other cervical vertebræ remaining separate, though extremely thin. Lesson (*Cet.* p. 226) describes the six first as quite thin in the *D. Delphis*, and the last as somewhat thick. Dr. Jackson, who points out these discrepancies, described the dolphin he examined as having the first and second cervical scarcely moveable upon each other, and the other five smaller and rather more moveable — *Jackson, Bost. Journ. N. H.* v. 155.

The vertebræ are thus enumerated :—

1. Cuvier, <i>Anat. Comp.</i> i. 103 .....	14	dorsal,	52	posterior
2. „ <i>Oss. Foss.</i> v. 303 .....	13	„	47	„
3. Lesson, <i>Cet.</i> 226 .....	13	„	52	„
4. Jardine, <i>Cetacea</i> .....	12	„	52	„
5. ? Jackson, <i>Bost. Journ. N. H.</i> v. 154...	14	„	55	„

Dr. Jackson gives the following description of an American specimen :—

Dusky black on the back, white on the belly, and lead-coloured on the sides; a dusky line from 1 to 2 inches in width commenced a little above the eye and passing along the sides was lost in the lead-colour within 18 or 20 inches of the tail, and another much less distinct ran parallel to this. Length  $7\frac{1}{4}$  feet. Forehead convex, divided from the snout by a furrow. Foetus 38 inches; back dark bluish grey; belly nearly salmon-colour; no longitudinal stripes as in the mother, but some very indistinct broad transverse stripes were seen towards the back; teeth had not yet appeared; cervical vertebræ 7, dorsal 14, posterior to these 55; the first and second cervical large and scarcely moveable upon each other, the other five were much smaller and rather more moveable.

Dolphin, *Jackson, Bost. Journ. N. H.* v. 153, 1845.  
Inhab. Atlantic Ocean, N. America.

Whales differing in no appreciable respect from the common dolphin of the British coast came round us in the high seas of every region of the globe during the voyage. It is widely open to question whether the dolphins of so many distinct climates are not also distinct species, but as long as we are to be guided by

general resemblance and are deficient in opportunities of comparing individuals, we must be content to regard them as identical. The contents of the stomach were fish, cuttle-fish, or shrimps. The food contained in the first compartment of the stomach had almost undergone any change, in the second its digestion had advanced, while in the third and fourth cavities it was reduced to well-assimilated pulp.—*Bennett, Whaling Voyage*, 238.

17. *DELPHINUS JANIRA*. The JANIRA.

Skull roundish; nose depressed, half as long again as the head; triangle rather in front of the tooth-line; intermaxillaries very convex behind, with a wide groove between, above in front; palate with very wide, deep grooves on each side, extending  $\frac{3}{4}$  of the length, centre ridge flattened in the middle, the intermaxillaries forming a long triangle in front; teeth  $\frac{1}{2}$ .

*Delphinapterus Peronii*, *Mus. Bristol Institution*.

*Delphinus Janira*, *Gray, Zool. E. & T.* 41. t. 23, skull.

Inhab. Newfoundland. Skull, presented to the Bristol Institution by G. Thorne, Esq.

	in.	lin.
Skull: Length, entire .....	17	10
„ head .....	6	1
„ nose .....	11	9
„ lower jaw .....	12	6
Width at orbit .....	7	8
„ notch .....	4	3
„ middle of beak ..	2	5

This skull differs from the *D. Delphis* of the Atlantic in the beak being much shorter and narrower.

#### 18. *DELPHINUS NOVÆ ZEALANDIÆ*. The NEW ZEALAND DOLPHIN.

Teeth  $\frac{1}{2}$ ; body elongated, rounded in front; nose cylindrical, rather flattened above; black-brown, edge of the upper jaw and beneath dull white, a yellow band from the eye along the side to below the dorsal; tail slate colour; pectoral and dorsal dull white, the latter dark-edged.

*Delphinus Novæ Zealandiæ*, *Quoy et Gaim. Voy. Astrol.* 49. t. 28;

*Gray, Zool. E. & T.* 41.

Inhab. New Zealand and Cape Gable.

	ft.	in.
Length, entire .....	5	10
„ to blowers ....	1	1
„ to eye .....	1	0
„ to dorsal .....	2	8 $\frac{1}{2}$
„ to pectoral ....	1	5

	ft.	in.
Width of caudal .....	1	2½
„ of pectoral.....	4	6
Height of dorsal .....	0	8½
Circumference .....	2	11

The following is probably the same:—

Dauphin à band fauve, *Voy. Pole Sud*, t. 21. f. 1. t. 23. f. 1, 2, not described.

Skull in figure rather suddenly contracted behind; nose 1½ of the entire length of skull, and 2½ times the breadth at the notch; intermaxillaries convex; teeth 1½. Skull so named in Mus. Paris, has a deep groove on each side the palate, and the triangle to the teeth-line.

Inhab. Van Diemen's Land.

a. Skull from Antarctic Expedition. Length 14 inches; of nose, 8; lower jaw, 12; width in middle of beak 1 inch 9 lines. Is very like figure of skull of *D. Janira*.

b. Skeleton. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

#### 19. DELPHINUS FORSTERI. FORSTER'S DOLPHIN.

Greenish brown or rust-coloured, beneath white; a small white spot on the disk of the dorsal and pectoral fin; teeth 1½ = 176, acute, erect, conical, incurved. Skull —?

*Delphinus Delphis*, Forster, *Descrip. Anim.* 280; *Icon. ined. Brit. Mus.* t. 31.

D. Forsteri, Gray, *Zool. Ereb. & Terror*, 42. t. 24, for Forster. Inhab. Pacific Ocean, between New Caledonia and Norfolk Island, Forster, 1774.

“Body straight, round, thickest behind; the pectoral fin tapering at both ends; head rounded, shelving in front, beaked; beak straight, pointed, cylindrical, depressed, attenuated and blunt at the tip; upper jaw shorter, both blunt, toothed; eyes small, lateral, oblong, nearly in the middle of the side, near the gape of the mouth, a small hole (the ears) above and behind the eyes; blower single, between the eyes in crown, lunate; a linear abdominal slit a little behind and beneath the dorsal fin, the front part the vulva, the hinder the vent; teats 2, one on each side the vulva, with a nipple the size of a pea; tail compressed on the sides, keeled above and below, and attenuated towards the tip; pectoral fin lanceolate, scarcely as long as the beak; dorsal fin in the middle of the back, nearly 3-sided, falcate behind, as long as the beak; tail horizontal, 2-lobed, each lobe oblong, lateral, sub-falcate.

"Gregarious, swimming very rapidly around the ships and boats.

"Length 6 feet from nose to tail."—*Forster*.

This species resembles, in the distribution of its colouring, the *Dauphin à band fauve* (*Voy. Pole Sud*), but the band on the side is whitish, not fulvous.

## 20. DELPHINUS SAO. The SAO.

Skull: beak elongate, shelving on the sides, with central cartilage near half its length in front; triangle to the teeth-line; teeth  $\frac{1}{2}$ — $\frac{3}{4}$ , small, cylindrical, hooked; palate flat in front, with a broad groove extending nearly half its length behind; intermaxillaries and palatine distinct, former broad in front; lower jaw slender, shelving, and flat-sided in front. Length 17.0, teeth-line 8.9, beak 10.6, width at notch 3.7.

Inhab. Madagascar, *Dussumier*, 1838. Skull, Mus. Paris.

†† Beak of skull twice as long as the brain-cavity. Teeth  $\frac{3}{8}$ — $\frac{5}{8}$ .

## 21. DELPHINUS LONGIROSTRIS. The CAPE DOLPHIN.

Black; dorsal fin large, high; teeth  $\frac{1}{2}$ — $\frac{3}{4}$ ; nose  $\frac{1}{3}$  of entire length; skull nearly  $3\frac{1}{2}$  times the length of its breadth at the notch.

*Delphinus longirostris*, *Gray, Spic. Zool. t. ; Cuv. R. A. i. 288*, from *Dussumier, MSS. Schlegel, Abh. t. 1, 2 & 4. f. 1*, from skull of *Brooks, Faun. Japon. t. 24*; *Gray, List Mam. B. M. 105*; *Zool. Erebus & Terror, 42*.

*D. Capensis*, *Gray, Spic. Zool. ii. t. 2. f. 1*, not *Cuv. nor Rapp*. Inhab. Southern Ocean. Cape of Good Hope, *Gray*. Japan and Ceylon, *Schlegel*. Malabar, *Dussumier*.

a. Stuffed specimen. Cape of Good Hope. Presented by the Trustees of the College of Surgeons. The specimen figured and described in *Spic. Zool.* and *Zool. E. & T.*

Length, entire .....	81 in.
„ of beak .....	7
„ to angle of mouth ....	13
„ to blowers .....	$7\frac{1}{2}$
„ to dorsal fin .....	38
„ to pectoral fin .....	21
„ of dorsal .....	12
„ of pectoral .....	13
Breadth of pectoral .....	5
„ of tail .....	26
Circumference .....	42

The figure in the *Fauna Japonica* is from a drawing by a Japanese artist, made under Mr. Burger's direction.

Skull named *D. longirostris*, in the Paris Museum (n. 4), from Malabar, brought by M. Dussumier, 1827, has the palate with a deep groove on each side of a central ridge in the hinder half, slightly keeled behind near blower; beak very long, very tapering; nasal very convex, rounded; teeth  $\frac{1}{2}$ , small, slightly curved; triangle exactly to the teeth-line.

	in.	lin.
Skull: length.....	2	0
„ of beak .....	13	9
width at notch .....	3	2
„ of middle of beak ..	1	7

\*\*\* Skull round; triangle not reaching to the teeth-line; palate convex, with a very concave line on the hinder part of each side; beak twice as long as head. Teeth  $\frac{1}{2}$ .

## 22. DELPHINUS MICROPS. The SMALL-HEADED DOLPHIN.

Skull small, subglobular; palate convex; nose very long, slender, twice as long as the length of the brain-cavity, nearly four times as long as broad at the notch; intermaxillaries convex above, with a broad cavity between them in front, rather contracted in front of the blowers; teeth  $\frac{1}{2}$ ; maxillaries very spongy; the triangle in front of the blowers short, not nearly reaching to the line of the hinder tooth; palate with a prominent ridge extending along its hinder two-thirds.

*Delphinus microps*, Gray, *Zool. E. & T.* 42. t. 25, skull.

Inhab. Coast of Brazil, Dr. Dickie.

a. Skull —? From the Haslar Hospital.

The specimen figured in the *Voyage of the Erebus and Terror*, tab. 25. p. 42.

Dimensions of five skulls in inches and lines: the 1st is in the Norwich Museum, the 2nd in the British Museum, 3rd, Museum of the College of Surgeons, the 4th, Dr. Dickie's Collection, 5th, in the Edinburgh College, n. 164.

	1. in.	2. in.	3. in.	4. in.	5. in.
Length, entire .....	17·6	15·6	15·0	18·0	16 $\frac{1}{4}$
„ of nose .....	...	...	9·6	11·0	10 $\frac{1}{4}$
„ of teeth-line ...	...	...	8·0	8·6	...
„ of lower-jaw ...	14·9	13·0	12·6	...	...
Width at notch .....	...	2·7	2·6	4·0	3
„ at orbits .....	...	...	5·3	6·0	...
„ of middle of beak	2·3	2·7	1·9	2·3	...
„ of intermaxillaries	8·0	9·0	...	2·0	...

Var. 1. Skull in Mus. Coll. Surg. Edin. n. 164. Barclay Collection. Head smaller, and the nose rather shorter, only  $1\frac{1}{2}$  the length of the brain-cavity, but quite as long as compared with the width of the notch. Length, entire, 16.6, of beak 10.6; width at notch 3.0; triangle to the teeth-line rugose. Nose groove open in front. Teeth  $\pi\pi$ , small, curved.

This skull resembles Schlegel's figure of the skull of *D. longirostris* in general form, but the beak is rather more slender, and the orbits more obliquely truncated in front.

#### 14. STENO.

Head convex. Forehead convex. Beak moderate, tapering. Body elongate, fusiform. Pectoral fin moderate, ovate, falcate. Dorsal falcate, in the middle of the back. Skull round, subglobular. Forehead erect. Beak elongate, compressed, higher than broad, tapering in front, convex above. Triangle elongate, deep, produced rather beyond the teeth-line. Palate convex, not grooved on the side. Lower jaw elongate, compressed in front; symphysis elongate, about  $\frac{1}{2}$  the length.

*Steno*, Gray, *Zool. Erebus & Terror*, 43, 1847.

*Delphinus*, sp. Cuvier; *Schlegel*.

This genus is at once known from *Lagenorhynchus* and *Delphinus* by the length, compression, and tapering form of the beak of the skull.

The foetus of *Steno fuscus* is very peculiar for the elongated tapering head; the pectoral fins are rather large, strongly falcate; the dorsal rather beyond the middle of the back. Its tongue is flat on the top, and nearly as broad as the space between the sides of the jaws; it is entire on the edges of the sides, and slightly dilated in front, crenulated on the edge, and with a larger flat lobe in the middle of the tip. See *Zool. Erebus & Terror*, t. 26. f. 1, a, b, c.

\* *Beak separated from the forehead by a cross groove.*

#### 1. STENO MALAYANUS. The MALAY DOLPHIN.

Grey-ash above and below; nose of skull about  $\frac{3}{4}$  of the entire length; teeth  $\frac{3}{4}$ .

*Delphinus Malayanus*, Lesson, *Voy. Coq.* t. 9. f. 5; *Hist. Cetac.* 152; *Schlegel, Abh.* i. t. 1, 2. f. 2. t. 4. f. 3.

*D. Capensis*, Rapp. *Cetac.* t. 2. f. 1, not Gray nor Cuv.

*D. Rappii*, Reichb. *Cetac.* iii. 48. t. 18. f. 5, 7.

*D. plumbeus*, Cuv. *R. A.* i. 288; *F. Cuv. Cetac.* 151; *Mam. Lithog.* t.

*D. à ventre roux*, *Voy. Pole Sud*, t. 22. f. 2. t. 23. f. 3, 4.

*Steno Malayanus*, Gray, *Zool. Ereb. & Terror*, 43.

Inhab. Indian Ocean.

	ft.	in.
Length of animal, entire ...	5	11
„ of pectoral .....	1	1
Width of tail .....	1	11

There is a skull of *Dauphin à ventre roux* from Molucca, in the Paris Museum. The nose is very slender, attenuated. Palatal bone and intermaxillaries distinctly seen below; intermaxillaries very convex, dense; lower jaw very compressed in front; palate flat, rather convex on each side behind, very spongy.

There is a skull in the Paris Museum marked *D. plumbeus*, Malabar, *Dussumier*. It measures as follows: Length, 22; beak,  $13\frac{1}{2}$ ; teeth-line, 12; width at notch,  $4\frac{1}{2}$ ; symphysis of the lower jaw,  $5\frac{1}{2}$  inches; teeth,  $\frac{3}{4}$ – $\frac{3}{4}$ , large; beak elongated, higher than wide, compressed in front; triangle extending rather before the teeth-lines. In the Anatomical Museum of the Jardine des Plantes is a skull of a foetal specimen of this species, from Malabar, which is 12 inches long, with the beak  $8\frac{1}{2}$  inches long, and  $2\frac{1}{2}$  wide at the notch. The symphysis of the lower jaw is  $2\frac{1}{4}$  inches long. The bones are not united; the upper teeth are 36; they are as large as those of the adult skull, and all enclosed in a cartilage and very close together. From this skull it is evident that these animals are born with the full number of teeth, which only elongate as they gradually develop.

## 2. STENO FRONTATUS. The FRONTED DOLPHIN.

Nose of skull about  $\frac{2}{3}$  of its entire length, three times as long as its width at the notch, rather compressed, rounded in front; lower jaw subangular and bent up at the end, united about  $\frac{1}{2}$  of its length; teeth  $\frac{3}{4}$ – $\frac{3}{4}$ , often rather rugose.

Skin rough, back greyish black, belly dirty white. Female 9 feet long.—*Dr. Dickie*.

*Delphinus frontatus*, Cuv. *Oss. Foss.* v. t. 21. f. 7, 8. t. 22. f. 8;

*R. A.* i. 288; Gray, *List Mam. B. M.* 105.

*D. Reinwardtii*, *Schlegel, Abh.* i. 21. t. 2. f. 3, 4. t. 4. f. 7.

*Steno frontatus*, Gray, *Zool. Erebus & Terror*, 43.

Inhab. Indian Ocean. Pacific.

a. Part of the upper jaw, teeth large.

b. Bones of the ear. India. Presented by General Hardwicke.

c, d, e. Three skulls.



Dimensions of skull in the (no. 1) British Museum: no. 2. of skull of female in Dr. Dickie's Collection:—

	No. 1.		No. 2.	
	in.	lin.	in.	lin.
Length, entire .....	20	6	22	0
„ of nose .....	12	0	13	5
„ teeth-line .....	10	0	11	0
Width at notch.....	3	10		
„ at orbit .....	7	9	7	0
„ of middle of beak	2	0	2	0
„ of lower jaw .....	17	0	18	0
„ of symphysis.....	5	6	6	0

Var. 1. Lower jaw rather straighter below and rather wider behind, teeth  $\frac{3}{4}$ .

Var. 2. Nose much compressed on the side and depressed above, rather larger, rather more than three times as long as wide at the notch; teeth  $\frac{3}{4}$ .

Var. 3. Tooth-series rather longer, 10'' 6''' ; teeth  $\frac{3}{4}$ ; lower jaw like var. 1.

Dr. Dickie's skull: Teeth  $\frac{3}{4}$ ; the two front of lower jaw are small, and separated from the rest.

A fetus extracted from the womb of Dr. Dickie's specimen had the tail convex at the end and emarginate.

D. Geoffroyi, Desm. The type of the genus *Inia* has been confounded with this species.

### 3. STENO COMPRESSUS. The NARROW-BEAKED DOLPHIN.

Nose of skull much compressed, attenuated at the tip,  $\frac{2}{3}$  the entire length,  $3\frac{1}{2}$  times as long as its width at the notch; teeth conical, acute,  $\frac{3}{4}$ ; head narrow, and rather compressed at the orbit.

*Delphinus compressus*, Gray, *Cat. Mam. B. M.*

*Steno compressus*, Zool. Erebus & Terror, 43. t. 27, skull.

Inhab. —?

a. Skull. The specimen figured in the *Voyage of the Erebus and Terror*, pl. 27.

b, c. Two skulls.

d. Skull. South Sea. Antarctic Expedition. Presented by the Admiralty.

	in.
Length, entire .....	20 $\frac{1}{2}$
„ of nose .....	13
„ of lower jaw .....	17
„ of symphysis.....	6 $\frac{1}{2}$
Width of notch .....	3 $\frac{1}{2}$
„ at orbit .....	6 $\frac{1}{2}$

The skulls of this species are easily known from the former by being much more slender and more attenuated in front, and by the head, though longer, being  $2\frac{1}{4}$  inches narrower over the orbit; lower jaw nearly straight below, united for more than  $\frac{1}{2}$  its length.

It may be the same as *D. rostratus*, but the teeth are more numerous; and Cuvier's figure, which he thought might be Breda's species, certainly much better represents a common Indian species than this.

In one of the skulls the nose is rather shorter and more depressed.

#### 4. STENO ATTENUATUS. The SLENDER-BEAKED DOLPHIN.

Nose of skull  $\frac{2}{3}$  of entire length,  $1\frac{1}{2}$  the length of the skull,  $2\frac{1}{2}$  the length of the width of the notch, slender, tapering in front; intermaxillaries forming a long triangular part of the front of the palate; vomer elongate, in middle of palate; teeth  $\frac{1}{8}$ .

*Delphinus attenuatus*, Gray, *List Mam. B. M.* 105.

*Steno attenuatus*, Gray, *Zool. Ereb. & Terror*, 43. t. 28, skull.

Inhab. Cape Horn. Mus. Coll. Surg. Edinb.

a. Skull. Presented by Mrs. Ince.

b. Skull.

The specimen figured in the *Voyage of the Erebus and Terror*, pl. 28.

c. Skull. 9° N. lat. Presented by A. Pearson, Esq.

Measurement of the three skulls:—

	a.		b.		c.	
	in.	lin.	in.	lin.	in.	lin.
Length, entire .....	15	9	16	6	15	6
„ of nose .....	8	9	10	0	9	3
„ of lower jaw .....	13	3	.....		13	0
Breadth of temples .....	6	0	6	5	6	1
„ of notch .....	3	3	3	3	3	6
„ of middle of beak	1	6	1	7	1	8
„ of intermaxillaries	0	1	0	1	0	1

*Delphinus pseudodelphis*, Wiegmann, *Schreb.* t. 358, skull; *Reichb. Cetac. Anat.* t. 18. Teeth  $\frac{1}{2}$  or  $\frac{1}{3}$ . "Skull in Mus. Leyden the form of *D. Malayanus*, but beak shorter, and teeth shorter and thinner, very like those of *D. Delphis*. Palate not grooved. Symphysis of lower jaw rather long." May be the same as the *Steno attenuatus*, but the Museum copy of Schreber does not contain the plate referred to.

5. *STENO FUSCUS*. The CUBAN *STENO*.

Black above and below, in spirits. Head conical; gradually tapering into a rather long nose, without any separating groove, with five black whiskers on each side. Teeth — ?

*Steno fuscus*, Gray, *Zool. Ereb. & Terror*, t. 26. f. 1, foetus and tongue.

Inhab. Cuba, W. S. MacLeay, Esq.

a. Foetus in spirit, not in good state. Presented by W. S. MacLeay, Esq.

“\*\* Beak scarcely separated from the forehead.”

6. *STENO? ROSTRATUS*. The BEAKED DOLPHIN.

“Forehead gradually shelving to the beak” (*Cuv.*); the skull with the nose as long as the brain-cavity; teeth  $\frac{3}{4}$ — $\frac{3}{4}$ , rather large. Black, lower lip and body beneath rosy white, not separated by distinct lines, lower part of the sides black-spotted.

*Delphinus rostratus*, *Cuv. Ann. Mus.* xix. 9; *R. A.* i. 289; *F. Cuv. Mam. Lath.* t. ; *Cetac.* 156. t. 10. f. 2, not *Shaw*.

Dauphin de Breda, *Cuv. Oss. Foss.* 278, 296. v. 400. t. 21. f. 7, 8.

*Delphinus Bredanensis*, “*Cuv.*”; *Fischer, Syn.* 505, from *Cuvier, Oss. Foss.*

*D. oxyrhynchus*, *Jardine, Nat. Lib.* t. 27, cop. from *F. Cuv.*; *Vert. Nederl. Hist.* 1829, 236. t. 1, 2.

*D. planiceps*, *Breda; Schlegel, Abh.* t. 4. f. 8, teeth.

*Steno? rostratus*, Gray, *Zool. Erebus & Terror*, 43.

Inhab. North Sea. Holland, *Breda*. Brest, *D'Orbigny*.

“M. Blainville, who observed a skull of this species in the museum of Mr. J. Sowerby, says it had 22 teeth in each jaw, and the symphysis  $\frac{3}{4}$  the entire length,” *Desm. Dict. H. N.* ix. 160. If this is not a mistake for  $\frac{1}{2}$ , it will at once separate it from the other *Stenos*, and connect it with *Pontoporia*.

The skulls named *D. rostratus* in the Paris Museum are very like the Museum specimens of *Steno frontatus*. The nose is compressed in front. Teeth  $\frac{3}{4}$ — $\frac{3}{4}$ . Length, entire,  $21\frac{1}{2}$ ; nose  $12\frac{1}{2}$ , of symphysis of lower jaw  $5\frac{1}{2}$ ; width at preorbital notch 4 inches.

1. *Delphinus Chamissonis*, *Wieg.*; *Schreb. Supp.* t. 359; *Reichb. Cetac.* 126. 66. t. 22. f. 64, 65;

2. *Delphinus hamatus*, *Ehrenb.*; *Reichb. Cetac.* No. 1, *Anat.* t. 21. f. , Beak  $1\frac{1}{2}$  the length of the skull,  $2\frac{1}{2}$  the width at the notch; teeth  $\frac{3}{4}$ ;—probably belong to this genus.

The following species of this family require further examination:—

1. *D. velox*, *Dussum.*; *Cuv. R. A.* i. 288; *F. Cuv. Man. Lith.* t. ; *Cetac.* 154.  
Teeth  $4\frac{1}{2}$ ; nose rather more elongated.—*Cuvier.* Teeth  $3\frac{3}{4}$ ; grey, lips and lower jaw whitish.—*F. Cuv.*  
Inhab. Ceylon.
2. *Delphinus Boryi*, *Desm. Mam.* 515; *Desmoulin, Dict. Class.* H. N. t. 141. f. 2.  
Inhab. Madagascar. (Coast of New Holland?)
3. ? *D. Bertini*, *Desm. Mamm.* 516, from Dauphin de Bertin, *Duham. Pech.* ii. 41. t. 10. f. 3.  
Cachalot, junior, *Blainv.*  
Beak distinct; lower jaw toothless.  
Inhab. —?
4. *D. Chinensis*, *Desm.*, from *Osbeck, Voy.*  
Shining white.  
Inhab. Chinese seas.
5. *Delphinus coronatus*, *Fremenville, Nov. Bull. Soc. Phil.* iii. 56. 78. t. 1. f. 2, a, B; *Desm. Mam.* 512.  
*Delphinorhynchus coronatus*, *Lesson, Man.* 405; *Fischer, Syn. Mam.* 505.  
Black; forehead with two concentric yellow circles; beak very long; teeth  $3\frac{3}{4}$ ; dorsal fin very minute.  
Inhab. Spitzbergen!
6. *Delphinus Pernettyi*, *Desm. Mam.* 543.  
*D. Pernetensis*, *Blainv.*; *Desm. N. D. H. N.* ix. 154.  
*D. Delphis*, var. *a.* *Bonnat. Cetol.* 21.  
*Delphinorhynchus Pernettyi*, *Lesson, Man.* 406, from Dauphin, *Pernett. Voy.* 99. t. 2. f. 1.  
Hab. —?
7. *Phocæna pectoralis*, *J. Peale, U.S. Exp. Exped.*  
Bluish black; a white spot on each side of the breast, in front of the pectoral fin; a frontal band of bright slate-colour extends a short distance behind the eyes; vent, abdomen, and edge of lips reddish white. Teeth  $3\frac{3}{4}$ — $4\frac{3}{4}$  = 92. Length 104, end of snout to corner of mouth  $11\frac{1}{4}$ , to eye 13 inches.  
Inhab. Island of Hawai; Hilobay.
8. *Phocæna australis*, *J. Peale, U.S. Exp. Exped.* 33. t. 6. f. 2.  
Snout black; fins (all) dark slate-colour; sides paler or

grey; a white lateral line commences opposite the posterior edge of the dorsal fin, and reaches the tail; beneath white, which joins the grey of the side by an undulated line. Teeth  $\frac{4}{3}$  -  $\frac{3}{3}$  = 120. Length 84, pectoral fin 16 inches.

Inhab. South Atlantic Ocean; Coast of Patagonia.

9. *Delphinus lateralis*, *J. Peale, U.S. Exp. Exped.* 35 (t. 8. f. 1. ined.).

Snout small; body thick, but much compressed behind the dorsal; light purplish grey beneath, while a dark lateral line edged with spots separates the colours of the upper and under part of the body; a separate line, paler in colour, branches from the lateral line opposite the pectoral fin and passes downwards and backwards; another connects the eye and pectoral fin; fins and snout black. Teeth  $\frac{4}{3}$ ,  $\frac{4}{3}$  = 164. Length 90 inches.

Inhab. Pacific Ocean, lat. 13° 58' N., long. 161° 22' W.

10. *Delphinus albimanus*, *J. Peale, U.S. Exp. Exped.* 33 (t. 7. f. 1. ined.).

Snout, head, back, tail and dorsal fin blue-black; belly and pectoral fin white; sides pale tawny; eyes small, brown, and surrounded with a black ring, which joins the black of the snout; body between the dorsal fin and tail very much compressed. Teeth  $\frac{4}{3}$  -  $\frac{4}{3}$ . ♀ Length 78; snout  $5\frac{1}{2}$ ; pectoral fin  $11\frac{1}{2}$ ; of end of snout to eye 12 inches.

Inhab. Coast of Chili.

11. *Delphinus albirostratus*, *J. Peale, U.S. Exp. Exped.* 34 (t. 6. f. 2. ined.).

Elongate, dorsal fin nearer the head, dark blue grey; fins and back nearly black; a dark line connects the corner of the mouth with the pectoral fin; front and sides dark grey, covered with small vermicular white spots; end of the snout white, commissure of the lips pale yellow.

Inhab. Pacific Ocean, lat. 2° 47' S., long. 174° 13' W. 22 Aug.

The following species have been named and figured by the sight caught of them when swimming!

*D. albigenas*, *Quoy, l. c. t. 11. f. 2.*

*D. rhinoceros*, *Quoy, l. c. t. 11. f. 1*, both from New Holland.

*D. lunatus*, *Lesson, Voy. Coq. t. 9. f. 4*, Tunenas of the Chilians, from Chili.

*D. leucocephalus*, *D. minimus* and *D. maculatus*, *Lesson, Voy. Coq. i. 183.*

The following species have been named only from figures or very slight descriptions:—

D. Senedetta, D. Commersonii, D. niger and D. Pernettii, *Lacep.*

D. Epidon and D. Mongitori, *Rafinesque.*

### 15. PONTOPORIA.

Skull roundish; beak very long, compressed, with a strong groove on each side above; eyebrow with a long, cylindrical crest; lower jaw compressed, with a deep groove on each side; symphysis very long. Teeth small, subcylindrical, smooth, rather hooked, acute.

Head with very long, slender beak. Dorsal fin high, falcate, central; pectoral fins rather elongate, subunate.

Pontoporia, Gray, *Zool. Ereb. & Terror*, 46, 1846.

Delphinus, sp. *Freminville.*

Stenodelphis, Gervais, *D'Orb. Voy. Amér. Mérid.*, not characterized.

#### 1. PONTOPORIA BLAINVILLII. The PONTOPORIA.

Skull, with the tubercles behind the blow-holes, broad, slightly convex; eye-brows with a strong, longitudinal crest; upper and lower jaw with a deep, well-defined ridge on each side. Teeth  $\frac{2}{3}$ , small, conical, hooked, smooth; symphysis more than half the length of the lower jaw.

Delphinus Blainvillii, *Freminville, Mus. Paris.*

D. Blainvillei, Gervais, *Bull. Soc. Philom.* 1844, 38; *Institute*, 1844.

D. (Stenodelphis) Blainvillei, Gervais & D'Orb. *Voy. Amér. Mérid. Mam.* t. 23, skull; *Reichb. Cetac.* 128. 70. t. 24. f. 78.

Pontoporia Blainvillii, Gray, *Zool. E. & T.* 46. t. 29, skull.

Inhab. Monte Video. Skull, Mus. Paris. *M. Freminville.*

M. Freminville described the Dolphin belonging to the skull as white, with a black dorsal band, and 4 feet long.

	in.	lin.
Length of skull .....	12	6
„ of beak .....	8	0
„ of symphysis .....	5	9
„ of teeth-line .....	5	4

M. D'Orbigny believes the dolphin he observed on the coast of Patagonia, of which the following is a description, is probably the same as *Stenodelphis Blainvillei*; it is figured *Voy. Amér. Mérid.* t. 23. The skull of this animal was not examined nor preserved.

Blackish, pale beneath, with a white streak along each side from behind the blower, where it is broadest and gradually becoming narrower behind, not quite reaching to the tail.

According to Desmarest, Freminville saw a dolphin on the coast of Brazil, which was 15 feet long, with a very convex forehead; ashy, with a white streak on each side of the head, on the back, throat and belly.

B. *Jaws much compressed. Symphysis of the lower jaw very long. Dorsal none. Teeth in both jaws rugose. Fluvatile.*

d. *Skull with the maxillary bones simple, expanded over the orbit. Teeth conical, with a tubercle on inner side. Pectoral fins or paddles ovate or oblong. Iniana.*

Iniana, Gray, Zool. Erebus & Terror, 45.

#### 16. INIA.

Head rounded, convex. Nose produced, nearly cylindrical, tapering, hairy. Blowers oblique, nearly above the pectoral fins. Ear-hole distinct. Teeth numerous, rugose, grooved, permanent; the front hooked; the hinder, close at the base, with a large rounded tubercle on the inner side. Dorsal fin none, but the back is keeled, ovate and subtriangular behind. Body compressed behind. Pectoral fin large. The skull depressed, with the nose twice as long as the brain-cavity, compressed, with a groove along each side. Temporal cavity very large, edged above by a strong crest, and the orbital hole very short, roundish. Muzzle of the young hairy.

Inia, D'Orbigny, Ann. Sci. Nat.; Nov. Ann. Mus. vii. t. 22.

Delphinus, sp. Desm.

Delphinorhynchus, sp. F. Cuvier.

#### 1. INIA GEOFFROYII. The INIA.

Delphinus Geoffroyii, Desm. Mam. 512.

D. Geoffroyensis, Blainv. Desm. N. Dict. H. N. ix. 151.

"D. à bec mince," Cuvier, R. A. i. 278?

Delphinorhynchus frontatus, F. Cuv. Cetac. 121.

Delphinorhynchus Geoffroyii, Lesson, Man. 405.

Inia Boliviensis, D'Orbigny, N. Ann. Mus. vii. t. 22. f. 3, cop.

F. Cuv. Cetac. 166. t. 10\*. t. 11; D'Orb. Voy. Amér. Mérid. t. 22, animal and skull.

Pale blue, reddish beneath; fins and tail olive, some reddish, others blacker; teeth  $\frac{3}{4}$ – $\frac{3}{4}$ .

Inhab. Upper Peru or Bolivia, River Moxos. Animal and skull Mus. Paris.

The following is the measurement of D'Orbigny's specimen :—

	met.	cent.
Length, entire . . . . .	1	4
„ of muzzle . . . . .	0	23
„ to eye . . . . .	0	34
„ to blower . . . . .	0	40
„ to ears . . . . .	0	43
„ to pectoral fin . . . . .	0	52
„ to dorsal fin . . . . .	1	30
„ of pectoral . . . . .	0	42
Breadth of pectoral . . . . .	0	18
„ of caudal . . . . .	0	50
Height of dorsal . . . . .	0	9
Circumference of thickest part . . .	1	4

The specimen in the Paris Museum, which Desmarest described as *Delphinus Geoffroyii*, is evidently this species. It was taken from the Lisbon Museum, and is covered with paint. It has no dorsal, and it shows the teeth sufficiently to exhibit their rugose state, and the large and peculiar tubercle on the inner side of the hinder ones, which is characteristic of this genus, and which appear to have been overlooked by M. Desmarest, who describes them as “coniques, obtuses, avec une sorte de collet inférieurement, et entre leur surface est rugueuse.”

This painted Lisbon specimen, according to M. F. Cuvier, was the type on which Cuvier described his *Delphinus frontatus* (*Cetac.* 122).

The skull in the Paris Museum, from M. D'Orbigny, has a prominent tubercle behind the blow-holes: eyebrows convex and rugose on the top; beak with a slight groove on each side above; lower jaw with scarcely any ridge on the sides; the symphysis long, occupying more than half the length of the lower jaw; teeth large, regular, hinder ones with a rounded, regular tubercle on the inner side.

	in.
Length of skull . . . . .	19
„ of beak . . . . .	12
„ of symphysis . . . . .	9
„ of teeth-line . . . . .	11

The *Delphinus macrogenius* (Fischer, *Cuvier, Oss. Foss.* v. 312. t. 23. f. 4, 5. f. 9–11) appears to belong to this tribe.

*e. Skull with the maxillary bones bent up in front of the blower and forming a vault. Teeth compressed. Paddles or pectoral fins fan-shaped, truncated at the end. Platanistina.*

*Platanistina*, Gray, *Zool. E. & T.* 45, 1846.



## 17. PLATANISTA.

Head convex, beak compressed, curved up at the end; teeth compressed; dorsal none; back keeled in the place of the fin, and obliquely truncate behind; pectoral fan-shaped, truncated.

*Platanista*, *Pliny*; "Cuvier, 1829," fide *Lesson*, *Tab. Reg. Anim.*

198; *Wagler*, *N. S. Amph.* 35, 1830; *Gray*, *Illust. Ind. Zool.*

*Platanistina*, *Gray*, *Zool. Ereb. & Terr.* (misprint).

*Susu*, *Lesson*, *Œuv. Buffon*, i. 215, 1828; *Tab. Reg. Anim.* 198.

*Delphinorhynchus*, sp. *Lesson*.

*Delphinus*, sp. *Lebeck*.

There is a head of a young specimen in the *Anat. Mus. Univ. Edin. Knox Cat.* n. 105. The reflexed portion of the maxillary bones only partially developed; their inner sides are cellular and radiately ridged with a ragged edge.

As the animal increases in age, the ends of the jaws become more turned up, and the teeth enlarge and become thicker at the base.

## 1. PLATANISTA GANGETICA. The SOU SOU.

Blackish lead-colour, rather paler beneath.

*Delphinus Gangeticus*, *Lebeck*, *N. Schrift. Berlin, Natur.* iii.

280. t. 2; *Home*, *Phil. Trans.* 1818, 417. t. 20; *Roxburgh*,

*Asiatic Researches*, vii. 170. t. ; *Desm. Mam.* 513; *Fischer*,

*Syn.* 506; *Cuvier*, *Oss. Fos.* v. t. 22. f. 8-10.

*Delphinorhynchus gangeticus*, *Lesson*, *Man.* 406.

*Platanista gangetica*, *Gray*, *Illust. Ind. Zool.* t. ; *F. Cuv.*

*Cetac.* 252; *Gray*, *Zool. E. & T.* 45; *Cat. Mam. Brit. Mus.*

*Delphinus Shawensis*, *Blainv.* in *Desm. Dict. H. Nat.* ix. 153,

from spec. in *Mus. Coll. Surg.*

*D. rostratus*, *Shaw*, 514, from spec. in *Mus. Coll. Surg.*; *Home*,

*Phil. Trans.* 1820, t. 20.

*Platanista*, *Lesson*.

*Susu*, *Œuv. Buffon*, i. 215. t. 3. f. 3, 1828.

*Platanista*, *Plin. Hist. Nat.* ix. ch. 15.

Dauphine du Gange, *Cuvier*, *Oss. Foss.* v. t. 22. f. 8, 10, from

spec. *Shaw*.

Inhab. India, Ganges.

a. Stuffed specimen. India, Ganges.

b. " " Younger. India, Ganges.

c. Skull: end of nose nearly straight, young. India, Ganges.

d. " " end of nose recurved. India. Presented by Gibson Rowe, Esq.

## Suborder II. SIRENIA.

Body rather hairy. Muzzle bristly. Nostrils 2, separate, apical, lunate, valvular. Fore-limbs arm-like, clawed; hinder compressed, expanded, tail-like. Teats 2 pectoral. Teeth of two kinds.

Cete II. pars, *Gray, Ann. Phil.* 1825.

(Natantia) Sirenia, *Illiger, Prod.* 139, 1811; *Brandt, Symb. Sirenologia*, 132, 1846.

Sirenia, *Gray; Selys Longchamps*, 1842; *Schinz. Mam.* 491.

M. Amphibies, pars, *Cuvier, Tab. Elem.* 1798; *Dum. Z. A.* 1806.

M. Amphibia, pars, *Rafin. Anal. Nat.* 60, 1815.

Onguligrades anomaux, *Blainv.* 1816.

Les Cétacés Herbivores, *F. Cuv.* 1829.

Cetacea herbivora, *Gray, Lond. Med. Rep.* xv. 309, 1821; *Latr. Fam. Nat.* 1825, 64; *Brandt.*

Cete A., *Fischer, Syn.* 1828.

Ceti hydræoglossi, § a, *Wagler, N. S. Amph.* 32, 1830.

Heterodonta, Hydraula, ou Sirenix, *Lesson, N. Reg. Anim.* 134, 1842.

Manatina, *Reich. Syn. Mam. Cetac.* 15.

Silliche, *Oken, Lehrb. Nat.* 684.

## Fam. 4. MANATIDÆ.

Muzzle bristly; lips single; front of upper and lower jaws each covered with a hard, horny, porous, corrugated plate. Cutting teeth 2 or 4 above, large, conical and exserted, or small, abortive, and early deciduous. Canine none. Grinders  $\frac{3}{4}$ – $\frac{3}{4}$  to  $\frac{3}{4}$ – $\frac{3}{4}$ , tubercular, the front one deciduous. Nostrils 2, separate, lunate, valvular. Eyes small; ears none. Teats 2 pectoral. Stomach divided into four cells, two of them appendaged.

Sirenia, *Illiger, Prod. Mam.* 181.

Manatidæ and Dugongidæ, *Gray, L. Med. Rep.* xv. 309, 1821; *Ann. Phil.* 1825.

Trichecus, pars, *Cuv. Tab. Elem.* 1798.

Manatidæ, pars, *Selys Longchamps*, 1842.

Halicoridæ, *Gray, Ann. Phil.* 1825; *List Mam. B. M.* 106.

Sirenia dentigera seu Halicoræ, and Sirenia edentata seu Rhytinix, *Brandt, Symb. Sirenol.* 132, 1846.

Amphibia tetrapia Odobenia, Amphibia Diopia, *Rafin. Anal. Nat.* 60, 1815.

Sirenix, pars, *Lesson, N. Reg. Anim.* 154.

Manatina, *Reichb. Syn. Man.* 15.

## SYNOPSIS OF GENERA.

1. **MANATUS.** Tail rounded. Grinders  $\frac{3}{4}$  or  $\frac{3}{8}$ , tubercular.
2. **HALICORE.** Tail forked. Grinders  $\frac{3}{4}$ , flat tipped; upper cutting teeth produced, tusk-like.
3. **RYTINA.** Tail forked. Grinders none.

1. **MANATUS.**

Cutting teeth 2, very small, rudimentary, early deciduous. Canine none. Grinders  $\frac{3}{4}$ — $\frac{3}{8}$ , with two or three transverse three-tubercled ridges. Lips bristly. Back with scattered hairs. Fins with four rudimentary hoof-like nails. Toes surported with phalanges. Tail rounded or truncated at the end. Pelvis bone deficient? cæcum bifid at the tip.

*Manatus*, *Rondel, Pisc.* 490; *Storr, Prod.* 41, 1780; *Cuvier, R. A.*; *Illiger, Prod.* 140, 1811; *Rafin. Anal. Nat.* 61, 1815.  
*Trichechus*, sp. *Linn. S. N.* ed. 6. 39. ed. 10. ed. 12; *Erzleb. Mam.* 599.

*Odobenus*, pars, *Brisson.*

*Trichechus manatus*, *Oken, Lehrb. Nat.* 687, 1815.

? *Nemodermus*, *Rafin. Anal. Nat.* 60, 1815.

The number of grinders varies according to the age or state of the specimens. When complete they are  $\frac{3}{4}$ — $\frac{3}{8}$ , but the three front on each side are often deciduous; hence Home (*Phil. Trans.* 1821, 390) describes them as  $\frac{3}{4}$ — $\frac{3}{8}$ , and Cuvier as  $\frac{3}{4}$ — $\frac{3}{8}$ .

1. **MANATUS AUSTRALIS. MANATEE.**

Grey black.

*Manatus*, *Rondel, Pisc.* 490; *Klein, Pisc.* ii. 32; *Brisson, R. Anim.* 49, 352.

Kleiner Manate (*Manatus minor*?), *Zimmermann, Geog.* ii. 426, 388.

Lamantin, *Condam. Voy.* 154; *Buffon, H. N.* xiii. 377, 425. t. 57.

*Trichechus manatus*, *Linn. S. N.* i. 49; *Gmelin, S. N.* i. 60; *Schreber, Saugh.* t. 8, cop. *Buffon.*

*Manatus australis*, *Tilesius, Jahrb.* i. 23; *Ozeretskowsky, Nov. Act. Petrop.* xiii. 375. t. 13; *Fischer, Syn. Mam.* 501; *Reichb. Syn. Mamm.* 16; *Icon. Cetac.* t. 23. f. 72, 73, from *Humboldt, Anat. Cetac.* t. 27, 28, 29.

*Manatus* (*Trichechus manatus*) *australis*, *Illiger, Prod.* 110.

*Manatus Americanus*, *Desm. Mamm.* 507; *N. Dict. H. N.* xvii. 262. t. 96; *Home, Lectures Comp. Anat.* iv. t. 55; *Schreber,*

- Saugh.* t. 378. t. 380. f. 1, 2. t. 381. f. 3; *Guerin, Icon. Mam.* t. 46; *Lesson, Cetac.* 63.
- Manate de l'Orenoque, *Humb.*; *Wiegman. Arch.* 1838, 1, 18. t. 1, 2, anatomy.
- Var. ? *Manatus latirostris*, *Harlan, Journ. Acad. N. S. Philad.*; *Fauna Amer.* 277; *Fischer, Syn.* 502; *Reichb. Syn. Mam.* 17; *Icon. Cetac.* t. 23. f. 74; *Anat.* t. 27. f. ; *Wagner in Schreb. Saugh.* t. 379. t. 381. f. 2, 5.
- Manatus australis* (Surinam), *Schlegel, Abhand.* t. 5. f. 3, 4, 5, 6.
- Lamantin d'Amérique, *Cuvier, Ann. Mus.* xiii. 273. t. 19. f. 1-4; *Oss. Foss.* v. 242. t. 19. f. 2, 3, 9, 10, 11, 14, 15, 16, 17, 18, 19; *Home, Phil. Trans.* 1821, 390. t.
- Guiana Manate, *Penn. Quad.* ii. 297.
- Manate Clusii and Oronoko Manate, *Penn. Quad.* ii. 298.
- Var. ? *Manatus fluviatilis*, *Illiger*; *Wagner in Schreb. Saugh.* t. 279, head and jaws, cop. *Reichb. Icon. Cetac.* t. 23. f. 75.
- ANAT. Home, Lectures*, t. 55; *Cuvier, Oss. Foss.* v. t. 19; *Blainv. Osteog.* t. ; *Wiegmann, Arch.* 1838, 18. t. 2.
- Hab. Tropical America. Surinam, *Schlegel.* Guiana, West Indies, *Home.* Jamaica, *Sloane.* Florida?
- a. Fœtus, in spirits. Jamaica, *Mus. Sloane.*
- b. Skull. South America?
- Blainv. Osteog. Atl. G. Manatus (latirostris)*, pl. 111.
- b. Skull. Jamaica. From Mr. Gosse's Collection.

## 2. MANATUS SENEGALENSIS. LAMANTIN.

- Lamantin, *Adanson, Voy. Seneg.* 143.
- Lamentyn, female, *Barbot, Guin.* 562. t. 7, bad.
- Lamantin du Senegal, *Daub. in Buffon, H. N.* xiii. 431, no figure; *Cuv. Oss. Foss.* v. 254. t. 19. f. 4, 5, skull; *Robert. Compt. Rendu Acad. Sci.* 1836, 363.
- Trichecus Manatus Africanus*, *Oken, Lehrb. Nat.* 688, 1815.
- Manatus Senegalensis*, *Desm. Mam.* 508; *Lesson, Euv. Buffon*, i. 69; *N. Reg. Anim.* 155; *Fischer, Syn.* 502; *Schreb. Saugh.* t. 381, skull, t. 380, f. 3, 4; *F. Cuv. Cete*, t. ; *Gray, List Mam. B. M.* 106; *Edin. Journ. Sci.* ii. 186; *Lesson, Cetac.* 69; *Hamilton, Jardine, Nat. Lib.* viii. 298. t. 19. f. 2, 3; *Reichb. Syn. Mam.* 17; *Anat. Cetac.* t. 28, from *Cuvier.*
- Womanfish, *Purchas*, ii. 1446.
- Round-tailed Manate, *Penn. Quad.* ii. 296. t. 102.
- ANAT. Cuvier, Ann. Mus.* xiii. t. 19. f. 4, 5; *Oss. Foss.* v. t. 17. f. 2, 3, skull; *Schreber, Saugh.* t. 381; *Jardine, Nat. Lib.* viii. t. 19. f. 2, 3; *Reichb. Anat. Cet.* t. 28; *Blainv. Osteog.* t.
- Hab. West Coast of Africa.

*a.* Stuffed. West Coast of Africa. Presented by Messrs. Forster, Smith, and Co.

Var. ? *Manatus nasutus*, Wyman, *Proc. Boston N. H. S.* ii. 198; *Amer. Journ. Sci.* ix. 13. t.

Inhab. W. Africa, Vavallo River. Called Ne-hoo-le. Imperfect skull, Mus. Boston Nat. Hist. Soc.

## 2. HALICORE.

Cutting teeth  $\frac{1}{2}$ ; two inner upper and the four lower deciduous; the two outer upper conical, elongate, permanent. Canine none. Grinders  $\frac{1}{2}$ - $\frac{3}{4}$ , truncate, with two lateral grooves. Lips bristly; fore-feet fin-shaped, clawless. Caudal fin lunate, sinuated. Body hairy. Cæcum undivided. Pelvis bones distinct.

Dugungus, Tiedemann, *Zool.* i. 554.

Odobenus, Rafin. *Anal. Nat.* 60, 1815.

Dugong, Lacep.

Halicore, Illiger, *Prod.* 140, 1811; Oken, *Lehrb.* 689, 1818; Schinz. 493; Knox, *Cat. Prep. Whale*, 35, 1838.

Rosmarus, pars, Boddaert.

Trichecus, pars, Erxleb.

Cervical vertebræ 7, dorsal 19; ribs 19; lumbar, sacral and coccygeal, 30=56; V-shaped bone commencing between the 32nd and 33rd vertebræ. Weight of cranium and lower jaw, 7 lbs. 6 oz.; of bones of trunk, 20 $\frac{1}{2}$  lbs.; of pectoral extremities, 3 lbs.=30 lbs. 10 oz., the weight of an entire male adult human skeleton being only 12 lbs. The bones are extremely dense and of stony hardness; they contain no medullary cavity, but consist of a texture nearly as close as ivory and capable of being polished.—Knox, *Cat. Prep.* 35, 1838.

The tusks and teeth are "composed of two substances, a cortical and a medullary; the cortical, although holding the situation of enamel, is similar to bone, and possesses none of the qualities of that peculiar substance; the medullary portion is extremely hard, of a dense texture and homogeneous appearance."—Knox, *Cat. Prep.* 36.

The front portion of the upper and lower jaws is covered in the recent state with a horny covering. The outer surface presents numerous rough-looking elevations, many of them darker around the circumference than in the centre; these are arranged in rows of 7 or 8 each, running from each side towards the mesial line, but with a slight inclination from behind forward. The whole substance is composed of bristles about  $\frac{1}{2}$  of an inch in length, arranged vertically, and agglutinated together by a substance of a horny nature. Since examining the Dugong, now seven years

ago, from which the preparations nos. 111 and 112 were procured, I have been convinced that Steller was simply describing a similar substance, no doubt on a larger scale, as the animal is said to reach 26 feet. The substance is neither teeth nor analogous to teeth, and we might with the same propriety describe the rough and semi-horny substance covering the osseous palate of the sheep, cow, &c. as a tooth. As a proof that it is not analogous even to teeth, the surface of the lower jaw contains rudimentary teeth imbedded deep in the osseous texture.—*Knox, Cat. Prep.* 37, 1838.

Cervical vertebræ all free; 1st and 2nd, no lateral process; 3rd and 7th thin, with small lateral processes.—*Mus. Edinb.* 47.

Dr. Knox suspects there are two species, one with what Sir E. Home calls the permanent, and the other, erroneously, as Dr. Knox suspects, milk tusk.—*Trans. Roy. Soc. Edinb.* ii. 395.

# 1. HALICORE DUGONG. INDIAN DUGONG.

Blade-bone broad, subtrigonal.

Hal. (*Trichechus*) Dugong, *Illiger, Prod.* 140; *Schreb. Saugth.* t. 380. f. 5, 6, t. 382, 383; *Reichb. Syn. Mam.* 16; *Icon. Cetac.* t. 22. f. 70, 71, from *F. Cuvier & Quoy*.

Hal. Dugong, *F. Cuv. Mam. Lith.* t. ; *Guerin, Icon.* t. 46; *Lesson, N. R. Anim.* 154; *Fischer, Syn. Mam.* 503; *Gray, List Mam. B. M.*

Hal. cetacea, *Illiger, Abhand. Berl. Akad.* 1813.

Hal. Indicus, *Desm. Mam.* 509; *Schreb.* ii. 267; *Quoy et Gaim. Voy. Astrol.* t. 27; *Owen, Jukes' Voy. Fly,* ii. 323, 325, 327.

H. Indica, *Rapp.* 26.

*Trichechus* Dugong, *Gmelin, S. N.* i. 60; *Eræleb. Syst.* 599; *Zimmermann, Geog.* ii. 425; *Voy. Pole Sud, Mamm.* t. 20, 20 a, b, c, d.

*Dugungus marinus*, *Tiedem. Zool.* i. 554.

*Dugungus Indicus*, *Hamilton, Jard. Nat. Lib.* viii. 300.

Indian Walrus, *Penn. Syn. Quad.* 338; *Shaw, Zool.* i. 239; *Quad.* ii. 269.

Lamantin, *Lequal, Voy.*

Manati, *Banks, Pennant, Quad.* 293; *Voy. de la Caille,* 229.

Le Dugong, *Renard, Poisson. des Ind.* i. t. 34. f. 180; *Buffon, H. N.* xiii. 374. t. 56, skull; *Camper, iii.* 479. t. 7. f. 2, 4; *Cuvier, Oss. Foss.* v. 259; *N. Act. Petrop.* xiii. 374; *F. Cuvier, Mam. Lithog.* t. 97; *Raffles, Linn. Trans.* ; *Phil. Trans.* 1820, 174; *Home, Phil. Trans.* 1820, 144. t. 12, 14, 314. t. 25, 31. 1821, 390; *Comp. Anat.* t. 52, young, t. 53, skeleton.

Dugong des Indes, *Quoy et Gaim. Voy. Astrol. Mam.* 143, t. 27; *Lesson, Cetac.* 80.

ANAT. *Daubenton, Buffon, H. N.* xiii. t. 56, skull; *Home, Phil. Trans.* 1821, t. 20; *Pander et Alton, Robben*, t. 5; *Cuv. Oss. Foss.* v. 259. t. 20, t. 19. f. 6, 7 (mutilated); *Volkman, Anat. Anim.* i. t. 9. f. 1; *Blainv. Compt. Rendu*, 1837, 3. f. ; *Camper*, ii. 479. t. 7. f. 2, 3, 4; *Owen, Jukes' Voy. Fly*, ii. 323, 325. f. 2, 327. f. 4, 328. f. 6; *Reichenb. Icon. Cetac.* t. 26, 33, 34, 35, 36.

Hab. Indian Ocean.

a. Animal, stuffed. Malacca.

b. Skull (adult). India. Presented by Walter Elliot, Esq.

## 2. HALICORE TABERNACULI.

Blade-bone — ?

*Halicore tabernaculi, Rüppell, Mus. Senckenb.* i. 113. t. 6.

Hal. Dugong, var., *Reichb. Syn. Mam.* 16.

Hal. *Hemprichii* (Nake), *Ehrenb. Symb. Phys.* ii.

Hal. *Lottum, Ehrenb. Symb. Phys.* i.

Hab. Red Sea.

## 3. HALICORE AUSTRALIS.

Blade-bone elongate, ovate.

*Halicore Indica, Rapp, Cetac.* t. 1, foetus.

*Halicore australis, Owen, Jukes' Voy. Fly*, ii. 325. f. 1, 327. f. 3, 328. f. 5.

*Manate, Dampier, Voy.* i. 33, 321.

Whale-tailed *Manate* (pars), *Penn. Quad.* ii. 292.

Hab. N.W. coast of Australia.

b, c. Two upper jaws. N.E. coast of New Holland. Presented by J. B. Jukes, Esq.

d. Skull. Presented by J. B. Jukes, Esq. (lower jaw wanting).

e, f. Two skulls. Moreton Bay. Presented by Capt. Stanley, R.N. Voyage of the Rattlesnake.

g. Skull. Darnley Island, Torres Straits. Presented by the Earl of Derby.

## 3. RYTINA.

Cutting teeth, canines and grinders, none. Muzzle blunt, lips double, outer upper bristly. Ears none. Eyes covered with a blinking membrane. Skin naked, covered with a thick, brittle or easily cracking fibrous epidermis. The fore-feet with claw-like callosities, not supported by phalanges. The tail horizontal, bifid. Teats two, pectoral. Pelvis bones distinct. Stomach simple.

*Manate seu Vacca marina, Steller, Akad. Petrop. Nov. Comm.* ii. 294. t. 14.

- Rytina*, Illiger, *Prod.* 141, 1811; *Oken*, *Lehrb. Nat.* 685; *Wagler*, 33.  
*Rhytina*, Brandt, *Mem. Acad. Imp. Peters.* vii. 1846; *Symb. Sirenologica*, 1846.  
*Rityna*, Lesson, *Nov. Reg. Anim.* 155, 1842 (misprint).  
*Stellerus*, *Desm.*; *Cuvier*, *R. A.* i. 275.  
*Hydrodamalis*, *Retzius*.

Dr. Knox (*Cat. Prep. Whale*, p. 37, 1838) shows that the substance in the palate which Steller describes, and which has been mistaken for teeth, is only a horny skin of the bent-down portion of the two jaws, common to this animal and the *Dugong*. This suggestion has been adopted by F. Cuvier (*Cetac.* 377) and Brandt in his *Sirenologia*. The latter figures them, and exhibits their structure under the microscope. This horny substance bears evidently a considerable analogy to the *baleen* of the common whale.

# 1. RYTINA GIGAS. The MORSKAIA KOROVA.

Black.

- Manate seu Vacca marina*, *Steller*, *N. Act. Petrop.* ii. 294.  
*Trichecus Manatus*, *Müll. Prod. Z. Dan.*  
*Trichecus (Manatus) borealis*, *Gmelin*, *S. N.* i. 60; *Oken*, *Lehrb. Nat.* 685.  
*Manatus gigas*, *Zimmerm. Geog.* ii. 426.  
*M. borealis*, *Tilesius*, *Jahrb.* i. 23; *Pallas*, *Zool. Ross. Asiat.* i. 272.  
*Manatus Stelleri*, *Ozeretskowsky*, *Nov. Act. Petrop.* xiii. t. 13. f. , embryo.  
*Rytina Stelleri*, *Illiger*, *Prod.* 141; *Desm. N. Dict. H. N.* xix. 574; *Reichb. Syn. Mam.* 15; *Icon. Cetac.* t. 22. f. 69, from *Steller*; *Anat. Cetac.* t. 25, from *Brandt*.  
*Stellerus borealis*, *Desm. Mam.* 510; *Lesson*, *Cetac.* 88; *Jardine*, *Nat. Lib.* viii. 307.  
*Rytina borealis*, *F. Cuvier*, *Cetac.* 41.  
*Rityna Stelleri*, *Lesson*, *N. Reg. Anim.* 155.  
*Rhytina borealis*, *Brandt*, *Mem. Acad. Petrop.* 1846; *Symb. Sirenolog.* 141. t. 1-4, skull; t. 5, ideal figure.  
*Stellere*, *Cuvier*, *R. A.* i. 275; *Oss. Foss.* v. 256.  
*Whale-tailed Manate*, *Penn. Quad.* ii. 292.  
*Hab. Arctic Ocean.* *Behring's Straits.* Skull, imperf. *Mus. St. Petersb.*  
 The Sea Ape, *Penn. Quad.* ii. 301 (*Trichecus Hydropithecus*, *Shaw*, *Zool.* i. 247; *Manatus Simia*, *Illiger*, *Abh. Berl. Akad.* 1813; *M. ? Hydropithecus*, *Fischer*, *Syn.* 502, all from *Steller*) is perhaps another animal of this family, if it is not a Seal?



## ADDITIONS.

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*Page 71, ZIPHIUS SOWERBIENSIS, add—*

*a.* Cast of skull. Presented by Dr. Acland.

Cast from Mr. Sowerby's specimen in the Anatomical Museum, Oxford.

*Page 126, DELPHINUS MICROPS, add—*

*b.* Skull, larger; the skull behind the frontal longer, slightly compressed; teeth  $\frac{2}{3}$  on each side; length, entire, 18"; tooth-measure 10½, beak 12, lower jaw 15½; width at orbit 6½, at notch 3, middle of beak 1½.

This skull chiefly differs from the type skull of *D. microps* in the back of the skull being much less convex, and in its being of a rather larger size: can this depend on the sex of the specimen?



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British Museum

Mammalia

II

Scala.

1850.





British Museum  
Mammalia Lib.

II

Seals.

1850.

1240

14 Nov 1840

# CATALOGUE

*Mu 1040*

OF THE SPECIMENS OF

# M A M M A L I A

IN

THE COLLECTION

OF THE

BRITISH MUSEUM.

PART II.

S E A L S.

LONDON :

PRINTED BY ORDER OF THE TRUSTEES.

1850.

**PRINTED BY RICHARD AND JOHN E. TAYLOR,  
RED LION COURT, FLEET STREET.**

## P R E F A C E.

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**THE** chief object in preparing the present Synopsis has been, to give at one view a complete Catalogue of all the specimens of Mammalia, and their Osteological remains, at present in the British Museum Collection, and an account of the species known to exist in other collections, but which are at present desiderata in the British Museum, so as to enable travellers, collectors, and others, to assist in completing the National Collection. For this purpose, a short description has been given of all the genera and species at present known to exist in the different museums and private collections, and at the end of each description is added an enumeration, stating the state, age, country, and other peculiarities of each specimen of the kind in the Museum Collection; or when the species is not at present in that Collection, the museum, in which it has been observed, is added after the general habitat of the species.

The different individuals of each species contained in the British Museum Collection are indicated by the letters *a*, *b*, *c*, &c. When the age of the specimen is not stated, it is to be understood that it is full-grown, or nearly so; when other-

wise, its state is marked immediately after the letter by which it is distinguished ; and if the sexes are known, it is stated to be male or female. These particulars are followed by the habitat, which is given as particularly as the materials possessed by the Museum permit. Those specimens which have been presented to the Museum have the name of the donor marked immediately after the habitat.

When there is no such indication, the specimens have been either purchased or procured in exchange ; and in this case, whenever the place or person from whence they have been received gives authenticity to the specimen, or adds anything to their history, they are noted as being from such or such a collection.

The various synonyma have been given to the different divisions of the class, and to the genera and subgenera and species, and a reference made to the works in which they have been characterized or described.

In the adoption of the names for these divisions and for the names of the genera and species, it has been thought right to use, whenever it was possible, that which was first used for the purpose. As far as regards the specific name, there is comparatively little difficulty in the application of this simple rule ; but ordinal, and especially generic names, have been used by different authors in senses so widely different, and the groups which they are intended to designate have been so variously extended and restricted, that it is no easy matter to determine, where several names have been used, which of them ought to be preferred.

As every original observer will constantly make use of characters which others may have overlooked, or not thought of so much importance as further researches have shown to belong to it, even when a generic name is used, it will of necessity be often employed in a different sense, or with a

more restricted, or very rarely a more extended meaning than its original proposer applied to it. If this was not allowed, many new names must be added to the list of genera, which is already so overburdened with synonyma.

In those cases where the two sexes of the same species, or any particular individual state or variety belonging to it, have been differently named, the names belonging exclusively to the state or individual described are placed after the reference to the specimens to which they apply.

To determine with accuracy the names and synonyma of the species, the various specimens, skeletons and other remains of these animals in the museums of the College of Surgeons of London and Edinburgh, of the Zoological Society, and of the different local museums, especially those of Haslar, Norwich, Bristol, Liverpool, &c., and the various continental museums of Paris, Leyden, Berlin, Vienna, and Frankfort, have been personally examined, and in some cases the specimens contained in those museums have been sent to the Museum, so that they could be actually compared with the specimens in the Museum Collection.

JOHN EDWARD GRAY.

Oct. 1, 1850.





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# CATALOGUE

OF

## SEALS.

### Fam. PHOCIDÆ.

Cutting teeth  $\frac{1}{2}$ , or  $\frac{3}{4}$ , or  $\frac{1}{2}$ , or  $\frac{3}{4}$ , conical or truncated; canines conical, sometimes elongated; grinders  $\frac{6}{6}$  or  $\frac{5}{5}$ , more or less lobed or plaited. Head rounded; face more or less produced; ears very small, rudimentary or none, external; eyes large, only slightly convex. Body elongate, hairy, attenuated behind; teats 2 or 4, ventral; feet short, enveloped in the body; the fore-feet short; fingers five-clawed; the hind-feet directed backwards, and close together; toes 5-clawed; tail very short, depressed, sharp-edged on each side.

Fera (partim), *Linn. S. N. i.* 55.

Bruta (part.), *Linn. S. N. i.* 48.

Phoca, *Linn. S. N. i.* 55; *Pennant, Syn. Quad.* 330; *Gray, Griffith A. K. v.* 175.

Phocidæ et Trichechidæ, *Gray, Ann. Phil.* 1825, 340.

Phocidæ, *Gray, Zool. Ereb. & Terror.*

Mammifères à Nageoires, Amphibies, *Desm. N. Dict. Hist. Nat.* xxiv. 34, 1804.

Amphibia, *Gray, Lond. Med. Repos.* 1821, 302.

Phocadæ et Trichechidæ, *Gray, Lond. Med. Repos.* 1821, 302.

Phocacærna, *Nilsson, Vetén. Akad. Handl.* 1837, 235; *Illust. Figurer. Scand. Fauna*, 1840; *Transl. by Dr. Peters, Wiegman. Arch.* vii. 301.

(Pinnipedia) *Rudolfus, Illiger, Prod.* 138, 1811; *Rüppell, Verz. Senck. Samml.* 167, 1845.

Les Phoques et les Morses, *F. Cuv. Dict. Sci. Nat.* lix. 463, 465, 1829; *Duvernoy, Tab. R. A.*

Tetrapterygia, *J. Brookes, Mus. Catal.* 36, 1828.

A

Phoques, *F. Cuv. Dent. Mamm.* 113, 1825.

Amphibies quadrirèmes, *Duvernoy, Tab. Anim. Vert.*

Quadrupeda Nexopoda seu Plectropoda, *G. Fischer, Zoognom.* 12.

Nectopoda, § 2. Pinnipeda, part., *G. Fischer, Zoognomia*, 15.

Phocidæ or Brachidontia, *J. Brookes, Cat. Mus.* 36, 1828.

Trichehidæ seu Campodontia, *J. Brookes, Mus. Catal.* 37, 1828.

Otariadæ, *J. Brookes, Mus. Catal.* 37, 1828.

Their limbs are short and fin-like, supported by the same number of bones as those of other carnivorous mammalia; the arm and leg bones are much shorter; the fingers and toes are armed with claws, and are webbed together. They swim with facility, and dive for a long period: on the earth they scarcely use their limbs in walking, the fore-arms resting inactive on the sides, and the hind-feet close together, parallel on the sides of the tail; they move by the action of the ventral muscles in small jumps, or by wriggling themselves alternately from side to side. They have very large, scarcely convex eyes; the nostrils are closed by their own elasticity, and opened at the will of the animal; the sense of smell is very acute, and the convolutions of the bones and membranes of the nose are much developed.

The Seals have long been considered as one of the most difficult families of Mammalia, partly on account of their great resemblance to one another in external characters, and the changes which they undergo during their growth in colour and form, but more especially on account of the difficulty of observing them in their natural habitations.

The labours of M. de Blainville, the two brothers Cuvier, and especially of Professor Nilsson of Lund, have done much to elucidate the characters of the European species and those frequenting the eastern coast of North America,—the species found in the North Pacific are only known by the descriptions of Steller, Pallas and Temminck. Many naturalists have been inclined to consider them as identical with those found in the southern part of the Pacific Ocean, believing that the species migrate from one extremity of the world to the other; though we have the testimony of most voyagers that Seals are very rarely found between the equatorial line and 21° north latitude.

The Seals of the Southern hemisphere have not been so well studied, from the want of sufficient materials. Cuvier, when he wrote the '*Ossemens Fossiles*,' possessed only eight skulls, belonging to four species (viz. 1. *Phoca leptonyx*; 2. *P. elephantina*; 3. *P. pusilla*; 4. *P. leonina*?); but as several of these had been brought home without the skins, he could only refer them doubtfully to established species. Indeed, almost the only knowledge that we have of these animals is derived from the observations of Cook, and the Forsters, who accompanied that

intrepid navigator as naturalists ; and the materials which they brought home were well collated together by Pennant, in his 'History of Quadrupeds,' a work of very extraordinary merit considering the date of its publication. England might then fairly be described as taking, as she should do, a lead in scientific Zoology : this period has not been fairly estimated by the modern school of Zoologists, who, at the opening of the Continent after the war, appear to have been so dazzled by the brilliant progress made by the Professors named by Napoleon, that they overlooked the fact that these men were only following in the footsteps of Pennant, Latham, Solander, the Forsters, Fabricius, and others, who were either natives of, or had been fostered by, the scientific men of this country, as Linnæus followed in the footsteps of Ray.

Besides the particulars given by Cook and Forster in the account of their voyages, Forster communicated to Buffon the figures of two of the species he had observed, accompanied by details of their organization and habits, which were printed in the supplementary volumes of Buffon's Natural History, and form the most complete and best account we have yet had of the history of these species.

Peron and Lesueur, in their record of Baudin's Voyage, indicated some Seals found in the South Sea, and give fuller details of the Sea-Elephant, they having been so fortunate as to fall in with some males of that species ; but the Natural History of the voyage was never published, so that we are indebted to Cuvier (Oss. Foss.) for the description of the only Seal they brought home, which appears to have been the Fur Seal of commerce.

In the Zoology of Captain Duperrey's 'Voyage of the Coquille,' a Seal is figured, under the name of *Phoca Molossina* ; but the skull and skin, now in the Paris Museum, as Nilsson has correctly observed, is only the young Sea-Lion's. In the 'Voyage of the Astrolabe' two other southern Seals are figured ; one called *Otaria cinerea*, Peron, which appears to be the Fur Seal of commerce, and the *Otaria australis*, which is very like my *Arctocephalus lobatus*, described from a skull in Mr. Brookes's collection many years previously. It is to be regretted, that the figures here referred to, especially of the skull, are so bad as to be utterly useless for the determination of the species without comparison of the original specimens.

In the French 'Voyage to the South Pole,' now in course of publication, figures are given of the Sea-Leopard and the common White Antarctic Seal, which they name *Phoca carcinophaga*, the two most common species found everywhere in these regions on the packed ice.

Mr. W. Hamilton has given an account of the Seals and other marine Mammalia, in Sir W. Jardine's 'Naturalists' Li-

brary,' which contains a carefully compiled account of these animals, and some original figures from the specimens in the Edinburgh and Liverpool Museums: but unfortunately, Mr. Stewart, the draughtsman, has been more intent on giving them an artistic effect than on attending to their zoological characters. Thus, some which should have no claws on their hind-feet, have large ones, and sometimes one too many for any beast; and the toe-membranes of all the Eared Seals or Otaries are represented as hairy instead of bald. The same author has given an account of the Fur Seal in the 'Annals of Natural History,' which he considers as different from the Sea Bear of Forster and other South-Sea navigators: according to Dr. Hooker, the Fur Seals rarely exceed  $3\frac{1}{2}$  or 4 feet in length.

Seamen have long divided the Seals, on account of the great difference in their form, into the Earless and Eared Seals. Buffon adopted the division; and Peron, in his account of Baudin's voyage (ii. 37), gave the name of *Otaria* to the Eared Seals. Cuvier and most naturalists have adopted this name.

In the 'Medical Repository' for 1821, p. 302, I considered the Seals as forming an Order named *Amphibia*, containing two families: *Phocadæ* for *Phoca* and *Otaria*, and *Trichecidæ* for *Trichecus*.

Dr. Fleming, in 1822, placed the Otters (*Lutra*), Sea Otters (*Enhydra*), the Seals (*Phoca*), Ursine Seals (*Otaria*), and Walrus (*Trichecus*), in a single group which he called *Palmata*.—*Phil. Zool.* ii. 187.

In the 'Annals of Philosophy' for 1825, I considered the genera *Phoca* and *Trichecus* as each forming a family, and proposed to divide the Seals thus:—I. Grinders many-rooted; ears none; nose simple.—1. *Stenorhynchina*, Pelagios and *Stenorhynchus*. 2. *Phocina*, *Phoca*.—II. Grinders with simple roots, or with divided roots, and with distinct ears. 3. *Enhydrina*, *Enhydra*. 4. *Otariina*, *Otaria* and *Platyrrhynchus*. 5. *Stemmatopina*, *Stemmatopus* and *Macrorhinus*.

M. F. Cuvier, in 1825, in the *Dents des Mammifères*, 118, divides the Seals into those which have many roots to the grinders, including *P. velutina*, *P. leptonyx*, and *P. mitrata*, and those with simple-rooted grinders, as *P. ursina* and *P. proboscidea*. In 1829, in the article ZOOLOGIE in the *Dict. Sci. Nat.* lix. 367, he divides them into—1. *Les Phoques* proprement dit, including the genera *Callocephalus*, *Stenorhynchus*, *Pelagius*, *Stemmatopus*, *Macrorhinus*, *Arctocephalus* and *Platyrrhynchus*, and 2. *Les Morses*, for the genus *Trichecus*. In a paper on the genus, in *Mém. Mus.* xi. 1827, 208, he proposed to divide them into the following subgenera placed in three sections:—

SECT. 1. Grinders similar, double-rooted.—1. *Callocephalus* (vitulinus); 2. *Stenorhynchus* (leptonyx); 3. *Pelagius* (monachus).

SECT. 2. Grinders simple-rooted; cutting teeth  $\frac{1}{2}$ .—4. *Stenmatopus* (cristatus); 5. *Macrorhinus* (proboscoidalis).

SECT. 3. Grinders simple-rooted; cutting teeth  $\frac{1}{2}$ .—6. *Arctocephalus* (ursinus); 7. *Platyrrhynchus* (leoninus). An abstract of this paper is given in Fischer, *Syn. Mam.* 230.

Mr. Joshua Brookes, in the Catalogue of his Anatomical and Zoological Museum, 80, 1828, divides the *Tetrapterygia*, or Seals, into three families: viz. 1. *Phocidæ* or *Brachiodontia*; 2. *Otariadæ*; and 3. *Trichehydæ* or *Campodontia*, p. 37.

Professor Nilsson, in 1837, in a monograph of the species of Seals, proposed to divide them into seven genera, distributed into two sections thus:—

SECT. I.—1. *Stenorhynchus* (leptonyx); 2. *Pelagius* (monachus); 3. *Phoca* (vitulina).

SECT. II.—4. *Halichærus* (grypus); 5. *Trichecus* (rosmarus); 6. *Cystophora* (proboscidea and cristata); 7. *Otaria* (jubata and ursina).

See *Vetensk. Acad. Handl.* 1837, 235; *Scand. Fauna*, no. 20, 1840. This essay is translated into German by Dr. Peters in *Wiegmann Arch.* vii. 301.

In the 'Zoology of the Erebus and Terror' there is a revision of this arrangement, which is followed in this Catalogue.

Mr. Turner, in 1848, proposed the following arrangement of the family *Phocidæ* from the study of the skulls:—

1. *Arctocephalina*: 1. *Otaria*; 2. *Arctocephalus*. 2. *Trichecina*: 3. *Trichecus*. 3. *Phocina*: 4. *Morunga*; 5. *Cystophora*; 6. *Halichærus*; 7. *Ommatophora*; 8. *Lobodon*; 9. *Leptonyx*; 10. *Stenorhynchus*; 11. *Phoca*.—*Proc. Zool. Soc.* 1848, 88.

#### SYNOPSIS OF THE TRIBES AND GENERA.

A. Grinders two-rooted; ears none; toes simple, of fore-feet short, of hind-feet unequal, the outer of each side longest, the middle shortest; the palms and soles hairy.

a. Cutting teeth  $\frac{1}{2}$ ; hind-feet nearly clawless; muffle hairy on the edge and between the nostrils; fore-feet triangular; wrist very short. *Stenorhynchina*.

\* First, second and third front upper and the first front lower grinders single-rooted, the rest two-rooted.

1. *LOBODON*. Skull and muzzle elongate; grinders unequally lobed.

**\*\* The front grinders of each jaw single-rooted, the rest two-rooted.**

2. **STENORHYNCHUS.** Skull elongated; muzzle elongate; grinders compressed, with three cylindrical elongated lobes, the centre one longest and largest.
3. **LEPTONYX.** Skull broad, depressed behind; muzzle short, broad; grinders subcompressed, with a small subcentral conical tubercle and a very small posterior one; the lower jaw narrow behind, without any hinder angle; fore-feet clawed.
4. **MONACHUS.** Skull broad, depressed behind; muzzle short, broad; orbits large; grinders small, conical, thick, with a small anterior and posterior lobe; lower jaw broad, with a distinct posterior angle; upper cutting teeth transversely notched.
5. **OMMATOPHOCA.** Skull broad, depressed behind; muzzle very short, broad; orbits very large; grinders small, compressed, with a central incurved lobe and a small lobe on each side of it; fore-feet very slightly clawed.
  - b. *Cutting teeth  $\frac{1}{2}$ ; the first grinder in each jaw single-rooted, rest two-rooted; muzzle bald, and callous between and above the nostrils, and divided by a central groove; wrist rather exerted; fingers subequal; claws five, large.*  
Phocina.
6. **CALLOCEPHALUS.** Muzzle rather narrow; whiskers waved; palate angularly notched behind; toes gradually shorter; web between the hind-toes hairy; hair cylindrical; under-fur thin.
7. **PAGOPHILUS.** Muzzle rather produced; whiskers waved; palate truncated behind; toes gradually shorter; web between hind-toes baldish; hair dry, flat, close-pressed, without any under-fur.
8. **PHOCA.** Muzzle broad, short; forehead convex; whiskers smooth, simple; palate rather angularly notched behind; ear-hole large; fingers unequal, the third longest, second and fourth long, the first and fifth shorter, nearly equal.
  - B. *Grinders with single root (except the two hinder grinders of Halichoerus).*
  - c. *Ears without any conch; toes simple, of fore-feet exerted, of hind-feet large, the inner and outer ones large and long, the three middle ones shorter; palm and soles hairy, sometimes chaffy and callous from wear; muffle hairy to the edge and between the nostrils.*



\* *Muzzle large, truncated, simple; canines large; grinders lobed, when old truncated. Trichechina.*

9. HALICHÆRUS. Muzzle broad, rounded: cutting teeth  $\frac{3}{4}$ ; grinders  $\frac{5\frac{1}{2}}{5\frac{1}{2}}$ , conical, the two hinder of the upper and hinder one of the lower jaw double-rooted, rest simple; canines moderate; whiskers crenulated; muffle hairy; palm and soles hairy; claws 5·5, elongate.

10. TRICHECHUS. Muzzle very broad, truncated, swollen and convex above; muffle, palm and soles chaffy, callous, with the hair more or less worn off in the adult (hairy when young?); cutting teeth  $\frac{3}{4}$  in youth,  $\frac{3}{4}$  in adult; grinders 4·4, truncated, all single-rooted; canines of upper jaw very large, exserted.

\*\* *Muzzle of the male with a dilatile appendage; cutting teeth  $\frac{3}{4}$ ; grinders with a large swollen root, and a small, compressed, simple, plaited crown; muffle hairy. Cystophorina.*

11. MORUNGA. Nose transversely wrinkled above, exsertile; muzzle of the skull broad, truncated in front; forehead convex; hinder palatine bone short, transverse; hair flat, truncated, close-pressed; whiskers round, rather waved, thick; front claws obsolete; crown of grinders finely plaited.

12. CYSTOPHORA. Nose of male with a large compressed hood extending to the back of the head; muzzle very broad, hairy; nostrils large; muzzle of skull broad, narrowed on each side in front; forehead flat; palatine bone broad, square; hair elongate, cylindrical; whiskers flat, waved; claws 5·5, distinct; crown of grinders strongly wrinkled.

d. *Ears with a subcylindrical distinct external conch; toes of the hind-feet subequal, short, with long membranaceous flaps at the end; fore-feet fin-like; palm and soles bald, longitudinally grooved; nose simple, with a rather large callous muffle above and between the nostrils; cutting teeth  $\frac{3}{4}$ , upper often bifid; grinders  $\frac{6\frac{1}{2}}{6\frac{1}{2}}$ . Arctocephalina.*

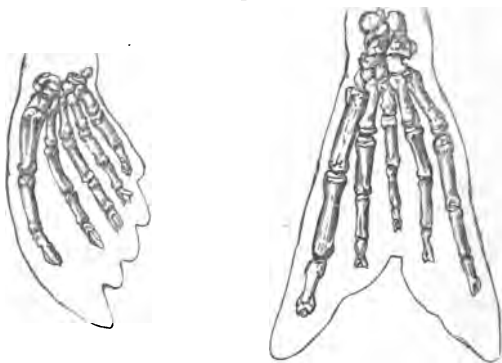
13. ARCTOCEPHALUS. Cutting teeth  $\frac{3}{4}$ , upper subequal; muzzle rather tapering in front; whiskers cylindrical, thick, not waved; palate of the skull rather narrower behind than in front, short, scarcely reaching the middle of the zygomatic arch; lower jaw narrow, rounded below, without any angle behind.

14. OTARIA. Muzzle broad, high in front; forehead rather convex; occiput high; cutting teeth  $\frac{3}{2}$ , upper and outer one very large, like canines; grinders of adult with very large roots, and small compressed lobed crown; palate-bone rather wider behind than in front, long, extending nearly to the articulation of the jaws behind; lower jaw broad, dilated in front and behind at the angle; the upper jaw elongate, and dilate with age.

SECT. I. Grinders  $\frac{5\frac{5}{8}}{5\frac{5}{8}}$ , two-rooted; ears none; toes simple, of the fore-feet short, of the hind-feet unequal, the outer on each side longest, the middle shortest, the palms and soles hairy.

The skull has no post-orbital process nor alisphenoid canal. The mastoid process is swollen, and seems to form part of the auditory bulla.—Turner.

Fig. 1.



Monachus albiventer. Fore and hind feet.

Phoca, Gray, Griffith, A. K. v. 175, 1827.

Phoca, Sect. I., F. Cuvier, Mém. Mus. xi.; Nilsson, Wiegmann, Arch. vii. 306; Scand. Fauna, n. xx.

Phocidæ seu Brachidontia, J. Brookes, Cat. Mus. 36, 1828.

Phoques dents racines multiples, F. Cuvier, Dent. Mamm. 116. t. 38, 1825.

Phocina, part., Turner, Proc. Zool. Soc. 1848, 88.

Subfamily 1. Stenorhynchina. *Cutting teeth  $\frac{1}{2}$ ; hind-feet nearly clawless; muffle hairy to the edge and between the nostrils; fore-feet triangular; wrist very short.*

Stenorhynchina, Gray, *Ann. Phil.* 1825, 340; *Zool. Erebus & Terror.*

\* *The first, second and third front upper, and the first front lower grinders single-rooted, the rest two-rooted.*

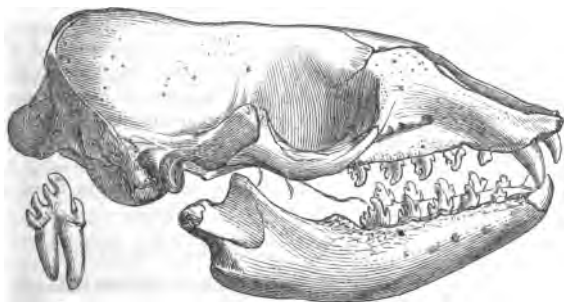
### 1. LOBODON.

Skull elongate; muzzle elongate; grinders rather compressed, with a large lobe in front, and three lobes behind the larger central one.

Head elongate; ear-conch none externally; muzzle broad; nostrils ovate, hairy to the edge; whiskers rigid, tapering, waved; skull elongate, rather depressed; muzzle broad, rather produced; orbits moderate: the petrose portion of the temporal bone very convex, nearly hemispherical.

Cutting teeth  $\frac{1}{2}$ , the upper middle ones moderate, with a smaller rather compressed crown, the two others large, conical, like the canines; the lower pair small, the two middle ones sub-cylindrical, rather internal, projecting forwards and rounded at the end, the outer ones rather larger, blunt; canines  $\frac{1}{11}$ , conical, curved, small, the upper largest; grinders  $\frac{5}{5}$ , with large swollen roots, the crown triangular, subtrigonal, lobed, lobes rather re-

Fig. 2.



Lobodon carcinophaga. Skull and hinder grinder.

curved at the tip, the larger lobe with one, or sometimes a second, small lobe in front, and with three lobes behind; the 1st upper

A 5

one smaller, with a single large root, the 2nd, 3rd and 4th nearly equal, and the 5th smaller and more compressed; the 2nd and 3rd have the root only divided at the base, the 4th and 5th have the roots divided nearly to the crown, and diverging; the first under is smallest and single-rooted, the rest are all similar, 2-rooted, the 3rd being the largest, and the 5th most compressed in the crown; the symphysis of the lower jaw is very long.

The teeth of the younger animals have a rather broader crown, with rather shorter tubercles, a rugose surface with some smaller tubercles on the inner side, near the base of the hinder lobes, but separated from them by a groove.

Body tapering behind. The fore limbs moderate, rather elongate, triangular, hairy above and below: toes 5, tapering, with a narrow, thick, hairy web between them; claws 5, elongate, acute, subequal: the hind limbs large, broad, triangular, hairy above and below; the outer toes on each side of the foot very large, broad, rounded at the end, the three middle ones smaller, narrow, tapering, with a thick hairy web between them, the central one smaller and shorter, all clawless: tail short, conical, depressed.

Fur close-set, rather rigid, directed backwards, soft at the end; the hairs flat at the base, tapering to a fine point, without any under-fur at the roots.

Inhab. Antarctic Ocean.

Lobodon, Gray, *Zool. Erebus & Terror, Mamm.*

Phoca, sp. *Homb. & Jacq. Voy. Pole Sud* (no description).

Stenorhynchus, part., Owen, *Ann. & Mag. N. H.* 1843, 331.

Halichoerus, sp. *T. Peale.*

This genus is more nearly allied to *Stenorhynchus* than to *Phoca*, to which the French surgeons have referred it, but still it differs so much from that genus in the conformation of the skull and the lobing and rooting of the teeth, that it can scarcely be left in it: but the latter peculiarity appears to have escaped Mr. Owen's research, for in his generic character of *Stenorhynchus* he says, "Anterior molars with one root, the rest with two roots," while in this genus the three front upper molars are single-rooted, a character by which this genus differs from all the others in the family.

#### 1. LOBODON CARCINOPHAGA. CRAB-EATING SEAL.

Head, back, hind feet and upper part of the tail pale olive; fore feet, side of the face, body and tail beneath yellowish white, the hinder part of sides of the body, the base of the hind fins yellow-spotted, spots unequal, often confluent: whiskers white, the upper ones smaller, dusky.

*Phoca carcinophaga*, *Homb. & Jacq. Voy. Pole Sud*, t. . Skull good. Not described.

*Stenorhynchus serripens*, *Owen, Ann. & Mag. N. H.* 1843, 331; *Proc. Zool. Soc.* 1848, 131.

*Lobodon carcinophaga*, *Gray, Zool. Erebus & Terror, Mammalia*, 2. t. 1. t. 2, skull; *Cat. Osteol. Spec. B. M.* 32.

*Halichoerus antarctica*, *T. Peale, U. S. Explor. Exped.* 30. t. 5, skull, fig. . p. 31.

Inhab. Antarctic Ocean, on the packed ice.

a. Skull, three parts grown. Antarctic Seas. Presented by the Admiralty from the Antarctic Expedition. Skull figured *Zool. Erebus & Terror*, t. .

b. Skull. Adult. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

c. Skull. Adult. Antarctic Seas. Antarctic Expedition. Presented by Lieut. W. Smith, R.N.

d. Skull. Adult. Antarctic Seas. Antarctic Expedition. Presented by Lieut. W. Smith, R.N.

e. Skull. Adult. Antarctic Seas. Antarctic Expedition. Presented by Lieut. W. Smith, R.N.—See Fig. 2. p. 9.

f. Skull. Young. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

g. Skeleton. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

h. Skull. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

**\*\* The first front grinder in each jaw single-rooted, the rest two-rooted.**

## 2. STENORHYNCHUS.

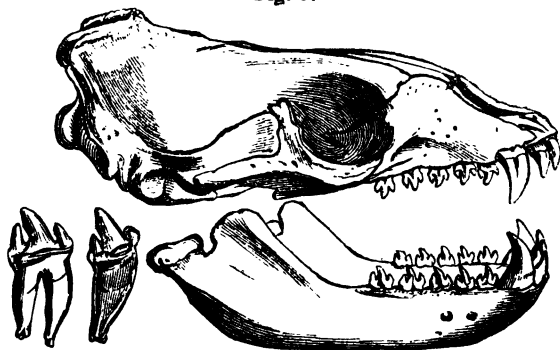
Skull elongate; muzzle elongate; grinders compressed, with three cylindrical elongate lobes, the centre one longest and largest.

Head elongate; ear-conch none externally; muzzle broad, elongate; muffle hairy to the edge and between the nostrils; nostrils acute; whiskers slightly waved; face elongate, rather compressed; muzzle tapering, rather produced and compressed on each side; orbits moderate; the petrose portion of the temporal bone rather convex.

Cutting teeth  $\frac{1}{2}$ , conical, acute, incurved, granular, and with a cutting edge on each side in a regular row, the two outer larger, the upper much larger than the lower, and separated from the canines by a broad space; canines conical, with sharp cutting edges within and on the sides, the upper largest: grinders  $\frac{5}{5}$ ,  $\frac{6}{5}$ .

with moderate roots, separated from the crown by a narrow groove, the crown compressed, divided into three elongate lobes, the centre lobe much the largest, longest, and subcylindrical, the anterior and posterior lobes conical; the bases of the lobes are surrounded by a sharp-edged ridge, with two small, short, conical tubercles on the inner side, the larger one being at the base of the separation of the hinder from the middle lobe: the front grinder in each jaw is rather the thickest, with a single thick conical root; all the rest have two rather diverging roots, divided nearly to the crown; the hinder tooth in each jaw is rather the smallest. Symphysis of the lower jaw short.

Fig. 3.



Stenorhynchus Leptonyx. Skull and grinders.

Body tapering behind. The fore limbs moderate, rather elongate. The toes are rather larger than the wrist, and each furnished with a small nearly terminal claw: the hind limbs are rather large, of two nearly equal lobes, destitute of any claws: the three middle toes small, tapering.

The fur close-set, short, without any under-fur; hairs flattened, tapering at the tip to a point.

In the young skull the grinders are well-developed, while the cutting teeth are small and far apart: the hinder grinders have four lobes, where they have only three in the adult.

Mr. MacMurtrie, in his translations of Cuvier, erroneously adds to the generic character in the text of the author, "but with single roots;" this is repeated in the reprint of the American edition published by Orr, i. 98.

Dr. Knox observes, "Teeth,  $\frac{4}{2} - \frac{2}{2} - \frac{1}{2} = 32$ : the two lower

middle incisors peculiar. Vertebrae:—cranial, 4; cervical, 7; dorsal, 14; lumbar, 6; sacral, 3; coccygeal, 13=47.

"The nostrils opened much after the manner of the Cetacea, in the form of elongated fissures, 1 inch from the extremity of the snout; the pelvic extremities very large and far back; tail extremely short. The skin was hairy. The stomach contained numerous fish-bones, a few feathers (gulls'), and some considerable portions of a pale green, broad-leaved, marine *Fucus*: thousands of a small, hard, round, white worm (parasitical) pervaded all parts of the intestines. The intestinal tube measured 71 feet 10 inches: caput cæcum, 1 inch 9 lines: diameter of small intestines, 1 inch; of large intestines, 1 inch 6 lines. Liver weighed 14 lbs.; kidneys, 2 lbs. each; spleen, 1 lb.; heart, 6 lbs. The arch of the aorta gave off an extremely short *innominata*, which divided it into a right carotid and subclavian, and left carotid; the left subclavian came off separately: it resembles Tiedemann's third variety, pl. 3 (copy published in Edinburgh)."

*Stenorhynchus* (*Stenorhynque*), *F. Cuv. Dict. Hist. Nat.* xxxix.; *Mem. Mus.* xi. 190; *Dict. Sci. Nat.* lix. 463 (1829); *Nilsson, Wiegmann Arch.* vii. 307; *Scand. Fauna*; *Gray, Zool. Erebr. & Terror, Mamm.*

*Phoca*, sp. *Home, Blainville, F. Cuv. Dent. Mamm.* t. .  
Inhab. Antarctic Ocean.

# 1. STENORHYNCHUS LEPTONYX. SEA LEOPARD.

Grey, paler beneath, with small black spots on the sides of the neck and body, and with a few smaller white spots on the sides; upper part of the hinder limbs dark, pale-marbled.

*Phoca Leptonyx, Blainv. Journ. Phys.* xci. 288, 1820; *Desm. Mamm.* 247, from *Home's specimen*; *Cuv. Oss. Foss.* v. 208. t. 18. f. 2; *Gray, Griffith, A. K.* v. 178; *Blainv. Ostéogr. Phoca*, t. 1 & t. 4. f. , skull (*Mus. Paris*); *F. Cuvier, Dent. Mamm.* 118. t. 38 A.

Seal from New Georgia, *Home, Phil. Trans.* 1822, 240. t. 29, skull.

Phoque quatrième, *Blainv. in Desm. Mamm.* 243, note; see *Cuv. Oss. Foss.* v. 207.

*Stenorhynchus Leptonyx, F. Cuv. Dict. Sc. N.* xxxix. 549. t. 44; *F. Cuv. Mém. Mus.* xi. 190. t. 13. f. 1; *Dent. Mamm.* 118. t. 38 A; *Nilsson, Wiegmann Arch.* vii. 307; *Scand. Fauna*, t. ; *Gray, Zool. Erebus & Terror, Mamm.* t. 3, animal, t. 4, skull; *Cat. Osteol. Spec. B. M.* 31; *Blainv. Ostéogr. Phoca*, t. 5. f. 9, teeth and skull.

*Phoca Homei, Lesson, Dict. Class. H. N.* xiii. 417.

The Small-nailed Seal, *Hamilton, Nat. Lib.* 180. t. 11 (nails too large).

*Stenorhynchus aux Petits Ongles, Hombr. & Jacq. Voy. à Pole Sud*, t. 9.

Sea Leopard of the Whalers.

Sea Bear of New Zealand, *Knox in Letter*.

*Phoca ursina*, or Sea Bear, *Pollach, N. Zealand*.

Inhab. Antarctic Ocean, on the packed ice.

a. Skin. Adult. Stuffed. Antarctic Ocean. Presented by the Lords of the Admiralty from the Antarctic Expedition.

b. Skin. Adult. Unstuffed.

c. Skull.

d. Skull. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

Skull figured *Zool. Erebus & Terror*, t. . f. .

e. Skull. Presented by the Admiralty.

f. Skeleton. Port Nicholson, New Zealand. Presented by Dr. Frederick Knox.

g. Skull. Antarctic Seas. Presented by the Admiralty.

h. Skull and bones of the body. Antarctic Seas. Presented by the Admiralty.

i. Skull. Antarctic Seas.

Mr. Owen (Ann. N. H. 1843, 331) appears to think that this animal is one-coloured, for he says the Sea Leopard is distinguished from it "by the spotted hide."

### 3. LEPTONYX.

Skull broad, depressed behind; muzzle short, broad; grinders subcompressed, with a small, subcentral, conical tubercle, and a very small posterior one; the lower jaw narrow behind, without any hinder angle; fore-feet clawed.

Head flattened; muzzle broad, rather short, rounded; muffle hairy between and to the edge of the nostrils; nostrils ovate; whiskers compressed, slightly waved; ears, no external conch.

Skull slightly depressed, expanded behind; muzzle rather short, broad, high above; orbits rather large: the petrose portion of the temporal bone convex, hemispherical.

Cutting teeth  $\frac{1}{2}$ , conical, rather recurved, those of the upper jaw largest; the middle in each jaw smaller; the outer upper much larger. Canines  $\frac{11}{11}$ , large, conical, curved, rather compressed, upper largest. Grinders  $\frac{48}{16}$ , moderate, rather far apart, parallel to the edge of the jaw, compressed, with subcentral, conical, prominent tubercle; the second, third and fourth, in the more perfect specimens, with a small conical tubercle on the



hinder edge, and a sharp-edged ridge round the inner side of the base. The front grinder in each jaw smaller, and with a single conical root, the rest all 2-rooted nearly to the crown. Lower jaw slender, with a short symphysis in front, and narrow, without any angle at the hinder part of the lower edge.

Fig. 4.



*Leptonyx Weddellii*. Skull and first and last grinder.

Fore feet small, elongate, triangular, hairy above and below, with five graduated, distant, marginal claws; hind feet moderate; the two marginal toes largest, rounded at the end; claws small, rudimentary, two middle largest.

Fur short, adpressed, without any under-fur; hair slender, tapering, slightly flattened.

The skull of this genus resembles in many respects Cuvier's figure of a skull of *Phoca bicolor*; but it differs from it in all the grinders being placed more longitudinally, and in the lower jaw being slender, and without any angle on the hinder part of the lower edge. It is far more nearly allied to that genus than *Stenorhynchus*, to which Mr. Owen (Ann. N. H. 1843, 331, 332) has referred it; observing that his *Sten. serridens* (our *Lobodon cancrivora*) shows modifications of the molar teeth which would give it a better claim to subgeneric distinction than the *Sten. Weddellii* (which he observed is the type of the subgenus *Leptonyx* of Mr. Gray) has been supposed to possess.

Mr. Owen made this remark, and drew up his specific character, without having seen the teeth; for the skull was not then removed from the skin, and the specimens in the British Museum were stuffed with their mouth nearly closed.

This animal is easily known from *Stenorhynchus* by the shortness of the wrist, and the triangular form of the fore feet, being

intermediate in this respect between that genus and *Ommatophoca*.

Mr. Swainson, in 1832, applied the name of *Leptonyx* to a genus of birds; and in 1837, the same name to a second: but the former had before been named *Pteroptychos*, and the latter *Coryphospiza*, so that the name may still be used for the Seal.

Inhab. Antarctic Ocean.

*Leptonyx*, Gray, *Mag. N. H.* 1836; *Zool. Voy. Erebus & Terror*, *Mamm.*; not Swainson.

# 1. LEPTONYX WEDDELLII. FALSE SEA LEOPARD.

Fulvous, with the front of the back, and a line down the back, blackish grey; whiskers brown, tapering.

Female and young blackish grey above; sides with a series of longitudinal yellowish spots.

*Phoca Leopardina*, Jameson, *Weddell, Voy. South Pole*, 22, 24, 134. t. , not good; *Spec. Mus. Edin.*

Sea Leopard, or Leopard Seal, *Weddell, Voy. S. Pole*, i. 22, 134. Otaria? *Weddellii*, Lesson, *Bull. Sci. Nat.* vii. 343, 438.

*Stenorhynchus Weddellii*, Lesson, *Mamm.* 200.

Leopard Seal, *Hamilton, Nat. Lib.* 183. t. 12 (from Capt. Weddell's specimen).

*Leptonyx Weddellii*, Gray, *Mag. N. Hist.* 1836; *Zool. Voy. Erebus & Terror*, t. 5, animal, t. 6, skull.

Inhab. Antarctic Ocean. South Orkney, *Weddell*.

a, b. Skin. Adult. Stuffed. Santa Cruz. Capt. Fitzroy, *R.N.*, 1833.

The specimens described as *Leptonyx Weddellii*, Gray, *Mag. N. H.* 1836; *Cat. Osteol. Spec. B. M.* 31.

N. B. When this species was first described, I thought it was the *Leopard Seal* of Weddell. I was afterwards induced to believe that I was mistaken, as the name *Sea Leopard* was applied by the Whalers to *Stenorhynchus Leptonyx*; but it would appear that they used the same name for the two Seals, for I have convinced myself, by examining the teeth of Weddell's specimen in the Museum of the University of Edinburgh, that my first opinion was correct.

c. Skin. Stuffed. Small. Antarctic Sea. Presented by the Lords of the Admiralty, from the 'Zool. of the Erebus and Terror.' Specimen described and figured in 'Zool. Erebus and Terror.'

d. Skull. River Santa Cruz, East coast of Patagonia. Presented by Capt. Fitzroy.

Skull of specimen.

e. Skull. River Santa Cruz, East coast of Patagonia. Presented by Capt. Fitzroy.

Skull of specimen.

f. Skull. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

The skull figured 'Zool. Erebus and Terror,' t. .

g. Skull. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

#### 4. MONACHUS.

Skull broad, depressed behind; muzzle short, broad, orbits large; grinders small, conical, "thick, with a small anterior and posterior lobe;" lower jaw broad, with a distinct posterior angle; "upper cutting teeth transversely notched."

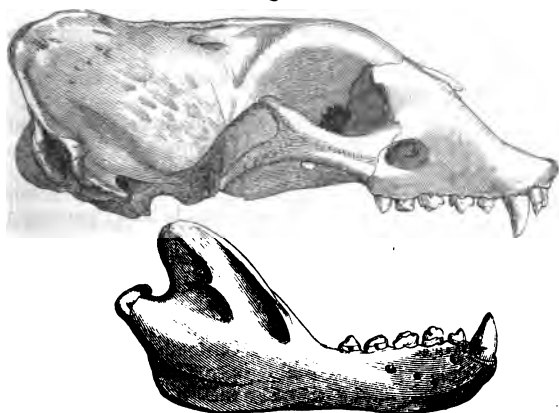
Inhab. Mediterranean.

*Monachus*, *Fleming, Phil. Zool.* ii. 187, 1822; *Nilsson, Vet. Akad. Handl.* 1837, 235.

*Pelagios* (*Pelage*), *F. Cuv. Mém. Mus.* xi. 193, 196. t. 13, 1827; *Gray, Zool. Erebus & Terror, Mamm.* 3.

*Pelagius*, *F. Cuv. Dict. Sci. Nat.* lix. 463, 1829; *Fischer, Syn. Mamm.* 230; *Wiegmann, Arch.* vii. 308; *Nilsson, Vet. Akad. Handl.* 1837, 235; *Scand. Fauna*, xx. t.

Fig. 5.



*Monachus albiventer*. Skull. From *Cuvier, Oss. Foss.*

## 1. MONACHUS ALBIVENTER. MONK SEAL.

Phoque à ventre blanc, *Buffon*, *H. N. Supp.* vi. t. 44; *Cuv. R. A.* i. 166; *Oss. Foss.* v. 208. t. 17. f. 1, skeleton, f. 2, 345, skull; *Lobstein*, *Obs. Anat. Comp. Rangani*, *Opusc. Scient.*

*Phoca Monachus*, *Herm. Berl. Abh.* iv. t. 12, 13; *Desm. Mamm.* 241.

*Phoca Hermanni*, *Lesson*, *Dict. Class. H. N.* xiii.

*Pelagios Monachus*, *F. Cuv. Dict. Sci. Nat.* xxxix. 550; *Ann. Mus.* xx.; *Mém. Mus.* xi. 193. t. 13, skull; *Blainv. Ostéog. Phoca*, t. 5, 7, 8, 9.

*Pelagius Monachus*, *Nilsson*, *Scand. Fauna*; *Wiegman. Arch.* viii. 309; *Gray*, *Zool. Erebus & Terror*.

*Monachus Mediterraneus*, *Nilsson*, *Vet. Akad. Hand.* 1837, 235.

*Phoca albiventer*, *Bodd. Elench.* 170.

*Phoca bicolor*, *Shaw*, *Zool.* i. 254. t. 70, 71.

*Phoca leucogaster*, *Peron*.

*Phoca vitulina*, *Wolf*, *Abbild.* i. 18. t. 4, good.

Phoque Moine, *F. Cuv. Ann. Mus.* xx. 387.

? *Phoca Isodorei*, *Lesson*, *Rev. Zool.* 1843, 256; *Echo Monde Savantes*, 1843, 228 (from Isle D'Oleron).

Pied Seal, *Penn. Quad.* ii. 173.

Mediterranean Seal, *Shaw*, *Zool.* i. 255.

Inhab. Mediterranean.

## 5. OMMATOPHOCA.

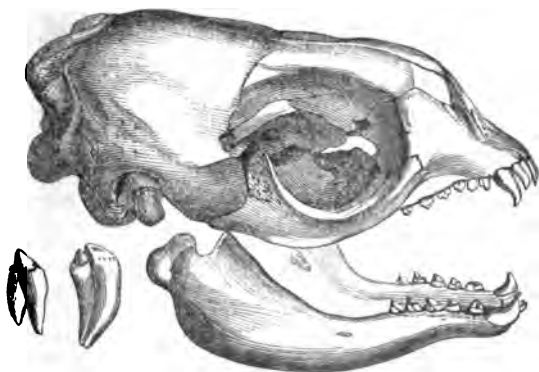
Skull broad, depressed behind; muzzle very short, broad; orbits very large; grinders small, compressed, with a central incurved lobe, and a small lobe on each side of it; fore-feet very slightly clawed.

Head short, broad; ears small, with no internal conch; muzzle very short, rounded; muffle hairy between and to the edge of the nostrils; nostrils ovate; whiskers tapering, conical.

Skull depressed, expanded behind; orbits very large; muzzle very short, broad, truncated in front, high behind; petrose portion of the temporal bone convex.

Cutting teeth  $\frac{1}{2}$ , small, conical, sharply recurved at the tip; grinders small, compressed, with a subcentral, rather large, broad, slightly incurved lobe, having a very small lobe on the inner side of its front, and a larger conical one in the middle of its hinder edge; the front grinder of each jaw is smaller and thicker, with a single conical root, the rest all with two diverging roots to the crown; lower jaw rather slender, with a short symphysis in front, and rather narrow, with a thick rounded edge in the hinder part of the lower edge in the place of the angle.

Fig. 6.



*Ommatophoca Rossii*. Skull and hinder grinders.

Fore-feet moderate, elongate, triangular, hairy above and below; toes 5·5, tapering, subequal, separated by a thick, narrow, hairy web; claws 2 or 3, very small, rudimentary, horny, acute; hind feet large, broad-triangular, hairy above and below; the outer toes on each side of the foot very large, broad, rounded at the end, the middle ones small, narrow, tapering, with a thick, hairy web between them; the central one smaller and shortest; all clawless; tail short, conical.

Fur very close-set, rather rigid.

Inhab. Antarctic Ocean.

*Ommatophoca*, Gray, *Zool. Erebus & Terror*, *Mamm.*

*Ommatophora*, Turner, *P. Zool. Soc.* 1848, 88, misprint.

#### 1. *OMMATOPHOCA ROSSII*. ROSS'S LARGE-EYED SEAL.

Greenish yellow, with close, oblique, yellow stripes on the side, pale beneath.

*Ommatophoca Rossii*, Gray, *Zool. Erebus & Terror*, *Mamm.* t. 7, animal, t. 8, skull and teeth; *Cat. Osteol. Spec. B. M.* 31.

Inhab. Antarctic Ocean.

*a.* Stuffed Skin. Antarctic Ocean. Presented by the Lords of the Admiralty, from the Antarctic Expedition.

*b.* Skull of *a.* Figured *Zool. Erebus & Terror*, t. 8. f. 1, 2 & 4

The first and second grinders of the upper jaws are small,

with a single conical root; and on the right side both these teeth are united together in one cavity; and as there are four other grinders in each side, it would appear as if there were front grinders of two sets. The third, fourth, fifth and sixth of the same jaw have a compressed, single, tapering root, with a deep central groove nearly dividing it into two parts, the groove being deepest and most distinguishable on their outer side. In the lower jaw the front grinder has a double crown, with a thick single root, tapering below, as if formed of two teeth united together by their roots. The second and third grinders have a broad, compressed, single root, divided by a rather deep, central, longitudinal groove on each side, and the fourth and fifth grinders each have two tapering, nearly parallel roots, well-separated at the base from each other. In this skull the palate is rounded behind, and the suture between the two bones is much more nearly in its centre. I do not recollect to have observed such a malformation, or soldering together of the roots of the teeth in any other beast.

*b, c. Skull and skeleton.*

The skull has the first upper and lower grinder with a single large subcylindrical root, tapering to a point beneath, and each of the other grinders has two conical separate roots diverging nearly from the collar. The palate is broad and rather truncated behind, and the transverse suture between the two bones in the palate is rather more than two-thirds the distance from the inner edge of the cutting teeth.

*d. Skull.* Figured *Zool. Erebus & Terror*, t. 8. f. 3, 5. Antarctic Ocean. Presented by the Lords of the Admiralty.

These skulls differ considerably from one another in the form of the palate and in the teeth; but it is probable that the teeth of the skull (*b*) belonging to the skin (*Zool. Erebus & Terror*, t. 8. f. 1, 2, 4) is a malformation.

Subfamily 2. *Phocina*. *Cutting teeth*  $\frac{3}{2}$ ; *the first front grinder in each jaw single-rooted, rest two-rooted; muffle bald and callous between and above the nostrils, and divided by a central groove; wrist rather exerted; fingers subequal; claws* 5.5, large.

*Phocina*, Gray, *Ann. Phil.* 1825, 340; *Zool. Erebus & Terror*, 3. *Phocæerna*, § 1, Nilsson, *Vet. Akad. Hand.* 1837; *Wiegmann. Arch.* vii.; *Scand. Fauna*, t. , 1840.

*Phoca*, Nilsson, *Vet. Akad. Hand.* 1837; *Wiegmann. Arch.* vii.; *Scand. Fauna*, xx. 1840.

*Callocephalus*, F. Cuv. *Mém. Mus.* xi. 1827.

## 6. CALLOCEPHALUS.

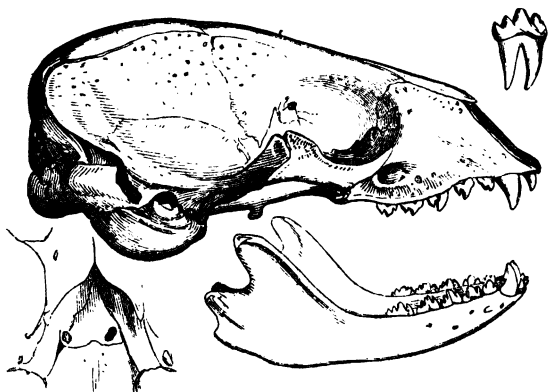
Muzzle rather narrow; whiskers waved: fingers gradually shorter. Palate angularly notched behind; hair subcylindrical, under-fur thin; web between the hind toes hairy.

Inhab. Northern Ocean.

*Callocephalus* (*Callocephale*), part., *F. Cuv. Mém. Mus.* xi. 182, 1827; *Dict. Sci. Nat.* lix. 463, 1829; *Fischer, Syn.* 230; *Gray, Zool. Erebus & Terror, Mamm.*

*Phoca*, sp., *Linn.*; *Fleming, Phil. Zool.* ii. 187; *Nilsson, Scand. Fauna*, xx.

Fig. 7.



*Callocephalus vitulinus*. Skull, grinder and palate.

\* Lower jaw short, branches rounded beneath, and diverging from the front.

## 1. CALLOCEPHALUS VITULINUS. COMMON SEAL.

Finely sprinkled, blackish and whitish, and with greyish brown and yellowish grey along the back, usually unspotted and blackish; the underside of the body whitish; a widish, paler, unspotted ring round each eye, and over each eye a small roundish spot, from which a bristle proceeds; edge of lower jaw rounded below in front, with a short symphysis; grinders large, rather crowded and oblique.

*Phoca vitulina*, *Linn.*; *Nilsson, Vet. Akad. Handl.* 1837; *Scand. Fauna*; *Wiegmann, Arch.* vii. 316; *Gray, Griffith, A. K.* v.

- 176; *Blainv. Osteog. Phoca*, t. 2, 5, 9; *Gaimard, Voy. Island.* t. 11. f. 1, 2, skull; *Ball, Trans. Roy. Irish Acad.* xviii. t. 4. f. 11-13, t. 5, t. 6; *Sketches Brit. Seals*, t. 8. f. 23-25, animal, t. 9. f. 26, 32, anat.
- Phoca communis*, *Linn. Mus. Ad. Frid.* i. 5.
- Phoca canina*, *Pallas, Zool. Ross. Asiat.* 114.
- Phoca littorea*, *Thienem. Nat. Bemerk.* 61. t. 6, 7, 8; *Bull. Sci. Nat.* v. 216.
- Phoque commun*, var. *F. Cuvier, Mamm. Lith.* ix. t. ; *Mém. Mus.* xi. 182. t. 12. f. 1 a, b, c.
- Phoca variegata*, *Nilsson, Scand. Fauna*, i. 359.
- Callocephalus vitulinus*, *F. Cuvier, Dict. Sci. Nat.* xxxix. 540; *Gray, Zool. Erebus & Terror*, 3; *Cat. Osteog. Spec. B. M.* 32.
- Seal*, *Penn. Brit. Zool.* i. 71. t. 48.
- Common Seal*, *Parsons, Phil. Trans.* xlvii. 120. t. 6; *Penn. Syn.* 339; *Bell, Brit. Quad.* 263.
- Phoca Linnæi*, *Lesson, Dict. Class.* xiii. 414.
- See *hund*, *Blumenb. Abbild.* t. 73.
- Veau marin*, *Perr. Anim.* i. 187. t. 97.
- Phoque commun*, *Buffon, H. N.* xiii. 333. t. 45; *Suppl.* vi. t. 46; *Cuvier, R. A.* i. 165; *Oss. Foss.* iv. 278, v. 200; *F. Cuvier, Ann. Mus.* xvii. 377; *Mam. Lithog.* t. .
- Var.? *Phoca communis octonotata*, *Kutorga, Bull. Soc. Imp. Nat. Mosq.* 1839, 189. t. 13. f. 1, t. 14. f. 1, 2, 3, t. 15. f. 1, 2 & 5, t. 16. f. 1-4, and 18. f. 1-4, skull.
- Var.? *Phoca communis undulata*, *Kutorga, Bull. Soc. Imp. Nat. Mosq.* 1839, 189. t. 13. f. 2, t. 14. f. 4-6, t. 15. f. 3, 4, t. 17, t. 18. f. 2.
- Var.? *Phoque à forte moustaches*, *Mus. Paris*; fide *Nilsson, Wiegmann, Arch.* vii. 311.
- Inhab. North Sea. Caspian Sea. Baikal.
- a. Skin, stuffed. Belfast. Mr. W. Thompson's Collection.
- b. Skin, stuffed.
- c. Skin, stuffed.
- d. Skull. Greenland. From Dr. Moller's Collection.
- e. Skeleton: young. Coast of England. Dr. Mantell's Collection.
- f. Skull. Greenland. Fig. 6. p. 21.
- g. Skull.
- h. Skull of specimen ( ). Coast of Europe.
- i. Skeleton of specimen ( ). Coast of Holland. Presented by the Zoological Society.
- j. Skeleton. Greenland. From Mr. Warwick's Collection.
- "*Phoca hispida* or *P. annulatus*," *Warwick*.



## 2. CALLOCEPHALUS HISPIDUS. RINGED SEAL.

"Grinders rather more simple than those of *C. vitulina*; skull more depressed; intermaxillaries advanced between the maxilla and the nasal for one-third their length; frontal and palatines not united in the orbits; palate angular behind."—*F. Cuvier*.

*Phoca* (*Callocephalus*) *hispida*, *F. Cuvier, Mém. Mus.* xi. 189. t. 12.

f. 3, *g, h, i*, skull; *Gaimard, Voy. Isl. Mamm.* t. 11. f. 1, 2, skull. Inhab. North Sea.

**\*\* Lower jaw dilated and inflexed beneath in front.**

## 3. CALLOCEPHALUS FŒTIDUS. RINGED SEAL.

Back blackish; on it or on its side there are largish oval, whitish, thin rings (from 1½" to 2" long); the circle round the eyes is of one colour; the hairs of the beard are thin and brown; the grinders rather far apart, and straight as regards the margin; fur short, crisp, recurved at the tip; lower jaw dilated and inflexed beneath in front.

*Young* greenish black (not eyed like the adult), beneath paler.

*Phoca fœtida*, *Müller, Zool. Dan. Prod.* viii.; *O. Fab. Fauna Græn.* 13; *Fischer, Syn.* 577; *Gray, Griffith, A. K.* v. 178.

*Phoca hispida*, *Fab. Schrift. Natur. Hist.*

*Phoca equestris*, *Pallas, Zool. Ross. Asiat.* iii. 40.

*Phoca annellata*, *Nilsson, Scand. Fauna*, i. 362. t. 38; *Thienem. Nat. Bemerk.* 83. t. 9–12; *Bull. Sci. Nat.* v. 261; *Wiegmann, Arch.* vii. 312; *Gaimard, Voyage Island.* t. 11. f. 7; *Ball, Sketches Brit. Seals*, t. 11. f. 36, skull.

*Phoque commune*, *F. Cuvier, Mam. Lithog.* iv. t. , cop. *Hamilton, Seals*, t. 4.

*Callocephalus discolor*, *F. Cuvier, Dict. Sci. Nat.* xxxix. 545; *Mém. Mus.* xi. 186.

*Phoca discolor*, *Gray, Griffith, A. K.* v. 177.

*Phoca Frederici*, *Lesson, Dict. Class. H. N.* xiii. 416.

? *Phoca Schreberi*, *Lesson, Dict. Class. H. N.* xiii. 414 part.

*Phoca hispida* (part.), *Erzl. Syst.* 589.

*Callocephalus hispidus* (part.), *F. Cuv. D. S. Nat.* xxxix. 547.

*Callocephalus annellatus*, *Rüppell, Verz.* 167; *Gray, Z. E. & T.* 3.

? *Ribbon Seal*, *Penn. Arct. Zool.* i. 165.

Inhab. North Sea. England, *Nilsson*.

a. Skin (stuffed).

b. Specimen stuffed. North Sea.

c. Skull of specimen b.

d. Specimen stuffed. North Sea.

e. Skull of specimen d.

\*\*\* *Lower jaw not observed.*

4. CALLOCEPHALUS CASPICUS. CASPIAN SEAL.

Back and sides grey-brown, decorated with irregular, thickish, yellowish rings; the sides of the mouth gradually of a pale yellowish; hairs of the beard thick, pale. Length 4 feet.

*Phoca Caspica*, Nilsson, *Vetensk. Akad. Hand.* 1837; *Scand. Fauna*; Wiegmann, *Arch.* vii. 313.

*Phoca canina*, var. *Caspica*, Pallas, *Zool. Ross. Asiat.*

*Phoca vitulina*  $\beta$ , Caspia, Gmelin, *S. N.*; Fischer, *Syn.* 675; Gray, Griffith, *A. K.* v. 173.

*Callocephalus Caspicus*, Gray, *Zool. E. & T.* 3.

Inhab. Caspian Sea.

5. CALLOCEPHALUS DIMIDIATUS. NORWAY SEAL.

Whiskers waved, dark grey above, lips and beneath pure white.

*Phoca dimidiata*, Schlegel, *Mus. Leyden.*

Inhab. Norway, Mus. Leyden.

May be only a particular state of one of the preceding species.

6. CALLOCEPHALUS LARGHA. LARGHA SEAL.

Muffle bald, narrow, with a central groove; whiskers compressed, waved; shining ashy white, with numerous scattered, small, oval black spots, smaller and closer on the back; feet brownish ash; claws long, black; no under-fur.

Young yellow; back dark grey, from the skin being visible through the pale hair; hair short, flattened; web baldish.

Var. Spots larger, more equally scattered (Japan).—Skull and teeth like *P. oceanica*, Temm.

*Phoca Largha*, Pallas, *Zool. Ross. Asiat.* i. 113.

*Phoca nummularis*, Temm. *Fauna Japon.* c. 3. t.

Chien de Mer de Détroit de Behring, Choris, *Voy. Pictoresque*, t. 8.

*Phoca Chorisii*, Lesson, *Dict. Class. H. N.* xiii. 417; Fischer, *Syn.* 24.

Phoque tigre, Krachenninikow, *Hist. Kamtsch.*

*Phoca tigrina*, Lesson, *Manuel*, 550.

? Phoque de Steller, Krachenn. *Descrip. Kamtsch.* 107.

Inhab. North Pacific. Japan, *Mus. Leyden.* East Shore, Kamtschatka, Pallas.

## 7. PAGOPHILUS.

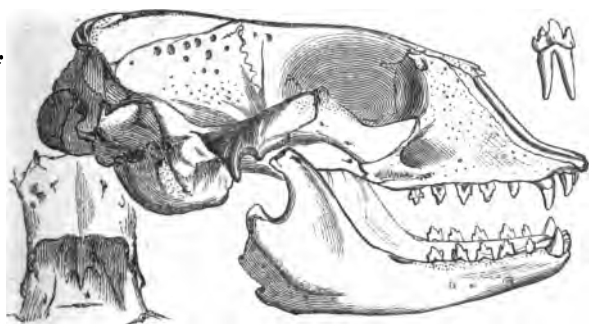
Palate truncated behind; fingers gradually shorter; muzzle rather produced; hair dry, flat, close-pressed, without any under-fur; web between the hind-toes baldish; lower jaw dilated and inflexed beneath in front, so as to close in the front part of the gullet; grinders rather distant.

Inhab. Northern Ocean.

*Callocephalus* §, *F. Cuvier, Mém. Mus.* xi. 1827.

*Pagophilus* (Subgen. of *Callocephalus*), *Gray, Zool. Erebus & Terror*, 3.

Fig. 8.



*Pagophilus Grœnlandicus.* Skull.

## 1. PAGOPHILUS GRÆNLANDICUS. HARP SEAL.

Grey or whitish, with large and small black spots; hairs of the beard waved on the edges; cutting teeth diminish in size; the grinders separated, straight; edge of the mouth oblique. Length 4 to 5 feet.

Until six or seven weeks old white, called *White Coats* at Newfoundland; at one year old they have small spots; at two years old they have large spots, and the males are called *Bed Lampiers*; at three years old the males and females have the harp-shape band.—*Jukes, l. c.*

*Phoca Grœnlandica*, *Müller, Zool. Dan. Prod.* 8; *Fab. Fauna Græn.* 11; *Skript. Nat. Selsk.* i. 87–157, ii. t. 12. f. 1, skull; *Thienemann, Nat. Bemerk.* t. 14–21; *Bull. Sci. Nat.* v. 261. t. 15 & 18, t. 19, skull; *F. Cuv. Mém. Mus.* xi. 186, t. 12. f. 2; *Nilsson, Scand. Fauna*, i. 370. t. 37, young; *Wiegmann, Arch.* vii. 314; *Gray, Griffith, A. K.* ii. t. 91 ♂. t. 92; v. 177; *Ball, Sketches of British Seals*, t. 11. f. 33, 35, skull (??) from River

B

- Severn*, t. 12. f. 37-39, skull, *Mus. Paris*; *Volkman, Anat. Anim.* i. t. 4. f. 1, 8.
- Phoca oceanica*, *Lepech. Act. Petrop.* 1777, i. 295. t. 7, 8; *Fisch. Syn.* 238; *Hamilton, Seals*, t. 7.
- Callocephalus oceanicus*, *Lesson, Man.* 196.
- Phoca semilunaris*, *Bodd. Elench.* 170.
- Phoca dorsata*, *Pallas, Zool. Ross. Asiat.* 112.
- Phoca Mulleri*, *Lesson, Dict. Class. H. N.* xiii. 412.
- Callocephalus Groenlandica*, *F. Cuv. Dict. Sci. Nat.* xxxix. 546; *Mém. Mus.* xi. 186. t. 12. f. 2, d, e, f; *Rüppell, Verz. Senck. Samml.* 169.
- Young. Phoca lagura*, *Cuvier, Oss. Foss.* v. 206; *Fischer, Syn.* 238; *Blainv. Osteog. Phoca*, t. 9 (?dentition); *Gaimard, Voy. Island.* t. 11. f. 6, skull; *Gray, Griffith, A. K.* v. 177.
- Callocephalus lagurus*, *F. Cuv. Dict. Sci. Nat.* xxxix. 546.
- Grey-bearded Seal from Orkneys, *Home, Phil. Trans.* 1822, t. 28. skull.
- Phoca albicauda*, *Desm. Mamm. Supp.* 541, from *Mus. Paris*.
- Phoca Desmarestii*, *Lesson, Dict. Class. H. N.* xiii. 416.
- Phoca Pilayi*, *Lesson, Dict. Class. H. N.* xiii. 416.
- Harp Seal, *Penn. Quad.* ; *Griffith, A. K. t.* ; *Bell, Brit. Quad.* 269; *Hamilton, Seals*, t. 7; *Jukes, Newfoundland.*
- Swart süde, *Egede, Grænl.* 62. fig.
- Attarsoak, *Crantz, Grænl.* 163.
- Phoque à croissant, *Buffon, H. N. Suppl.* 325; *Cuv. R. A.* i. 166.
- Inhab. North Sea.
- a. Adult. Stuffed. North Sea.
  - b. —. Stuffed.
  - c. —. Stuffed.
  - d. —. Stuffed.
  - e. Skin. Mr. Brandt's Collection.
  - f. Skull. Greenland. Dr. Moller's Collection.
  - g. Ditto. Ditto. Ditto.
  - h. Ditto. Ditto. Ditto.
  - i. Ditto. Ditto. Ditto.
  - j. Ditto. Ditto. Ditto.
  - k. Skeleton. Greenland. Mr. Brandt's Collection.
  - l, m, n. Skulls. Greenland. Dr. Moller's Collection.
  - o. Skull of a young specimen. Greenland. Dr. Edw. Rüppell's Collection.
- The front of the lower edge of the lower jaw of this young specimen is scarcely dilated.

## 8. PHOCA.

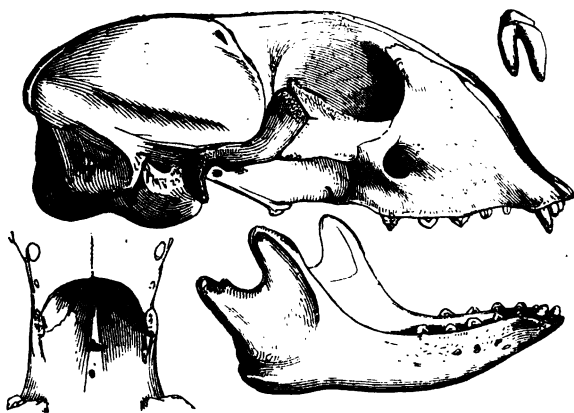
Muzzle broad, short; forehead convex; whiskers smooth, simple; ear-hole large: fingers unequal, the 3rd longest, 2nd and

4th long, the 1st and 5th shorter, nearly equal; palate with a semicircular edge behind.

Skull. Forehead arched; lower jaw with the front edge of the lower side rather dilated and inflexed; grinders small, far apart, often much worn.

*Females.* Teats 4.

Fig. 9.



*Phoca barbata.* Skull, grinder and palate.

*Phoca*, sp., Linn. &c.

*Phoca*, Gray, *Zool. E. & T.*

*Callocephalus*, sp., F. Cuvier, *Mém. Mus.* xi. 1827.

# 1. PHOCA BARBATA. LEPORINE SEAL.

*Male.* Black, belly yellowish, black dotted. *Female*, beneath grey.

*Phoca barbata*, *Fab. Skrivt. Nat. Selsk.* i. 139–159. t. 13. f. 3, skull; *Faun. Grænl.* 15; *Müll. Zool. Dan. Prod.* viii.; *Nilsson, Scand. Faun.* i. 374; *Wieg. Arch.* vii. 317; *Thienem. Nat. Bemerk.* i. t. 1, 2, 3, t. 4, skull; *Bull. Sci. Nat.* v. 261; *F. Cuv. Mém. Mus.* xi. 184. t. 12. f. 4, k, l, m; *Gray, Cat. Osteol. Spec. B. M.* 32; *Zool. Erebus & Terror*; *Griffith, A. K.* v. 178; *Fischer, Syn.* 240; *Blainv. Osteog. Phoca*, t. 9, dentition; ? *Temm. Fauna Japon.*

*Callocephalus barbatus*, *F. Cuv. Dict. Sci. Nat.* xxxix. 547; *Rüppell, Verz.* 167.

*Phoca leporina*, *Lepech. Act. Petrop.* i. 264. t. 8, 9; *Fab. Skriv.*

*Natur. Selsk.* i. 164; *Fischer, Syn.* 237; *Gray, G. A. K.* v. 178.

*Phoca Lepechinii*, *Lesson, Dict. Class. H. N.* xiii. 415.

*Callocephalus Leporinus*, *F. Cuv. Dict. Sci. Nat.* xxxix. 545.

? *Phoca maxima*, *Steller, Nov. Comm. Petrop.* ii. 290.

*Phoca albigena*, *Pallas, Zool. Ross. Asiat.* 107.

Leporine Seal, *Penn. Quad.* 177.

? Sea Calf, *Parsons, Phil. Trans.* n. 469. 383. t. 1. f. 1; *cop.*

*Buffon, H. N. Supp.* vi. t. 14.

*Phoca Parsonii*, *Lesson, Dict. Class. H. N.* xiii. 414.

? Long-bodied Seal, *Parsons, Phil. Trans.* xlvii. 121, *cop.*

? Grand Phoque, *Buffon, H. N.* xiii. 333.

? Great Seal, *Penn. Syn.* 341.

Inhab. North Sea and Japan, according to *Temm.*

Skin sold as an article of commerce in Japan.—*Temm.*

a. Skeleton. Length 8 feet. North Sea. Mr. Brandt's Collection.

b. Skin. Adult. North Sea. Mr. Warwick's Collection.

The Lachtak, *Steller, Nov. Comm. Petrop.* ii. 290=*Phoca Lachtak, Desm. N. Dict. H. N.* xxv. 588=*Phoca nautica, Pallas, Zool. Ross. Asiat.* i. 108—of Behring's Straits, have been referred to *Phoca barbata*, but Pallas describes the fingers as subequal and webbed to the end, which scarcely agrees with that animal.

The body is ventricose; the hair very short (5 lines), rigid, silver-grey; back brown lettered; tail very short.

The Maraku=*Phoca ochotensis, Pallas, Zool. Ross. Asiat.* i. 117—with soft fur and pure white when young, from the North Pacific, also requires further examination.

## 2. PHOCA TROPICALIS. JAMAICA SEAL.

Grey-brown; hair very short, strap-shaped, closely adpressed, black with a slight grey tip; whiskers short, thick, cylindrical, regularly tapering, without any appearance of wave or twist; fingers gradually shorter.

Inhab. Jamaica.

a. Skin imperfect, without skull.

Skin referred to in description of *Cystophora antillarum*, *Gray, Proc. Zool. Soc.* 1849, 93.

SECT. II. Grinders  $\frac{5\frac{1}{2}}{5\frac{1}{2}}$  or  $\frac{6\frac{1}{2}}{5\frac{1}{2}}$  with single root (except the two hinder grinders of *Halichoerus*).

A. Ears, conch none. Toes simple, of fore-feet exerted, of hind-feet large; the inner and outer ones large, long, the three middle ones smaller: palm and soles hairy (some-

*times chaffy and callous with wear). Muffle hairy to the edge and between the nostrils. Grinders  $\frac{5\frac{1}{2}}{5\frac{1}{2}}$ .*

Phocacædna, § 2, part., Nilsson, *Scand. Fauna*; *Wiegman. Arch.* vii. 317.

Phocina, part., Turner, *Proc. Zool. Soc.* 1848, 88.

Subfamily 3. Trichechina. *Muzzle large, truncated, simple; canines large; grinders lobed or truncated when old.*

Cetæ, part., Gray, *Ann. Phil.* 1825, 346.

Trichechina, Gray, *Zool. Erebus & Terror*, 3.

Trichecina et Phocina, part., Turner, *P. Z. S.* 1848, 88.

Trichechidæ, Gray, *Ann. Phil.* 1825, 340.

Trichehidæ seu Campodontia, J. Brookes, *Cat. Mus.* 37, 1828.

Les Morses, F. Cuvier, *Dict. Sci. Nat.* lix. 465; *Dent. Mam.* 233.

### 9. HALICHÆRUS.

Muzzle broad, rounded; cutting teeth  $\frac{1}{2}$ , grinders  $\frac{5\frac{1}{2}}{5\frac{1}{2}}$ , conical, the hinder two upper and one lower double-rooted, rest simple, canines moderate; whiskers crenulated; muffle hairy, becoming baldish with age; palm and soles hairy; claws 5-5, elongate. Palate of skull with a narrow rounded notch behind; lower edge of lower jaw rounded, not dilated or inflexed in front.

Fig. 10.



*Halichoerus griseus.* Skull.

*Halichoerus*, Nilsson, *Vet. Akad. Handl.* 1837; *Scand. Fauna*, i. 377; *Wieg. Arch.* vii. 318.

*Halichoerus*, Hornschuch, *Isis*, viii. 1824, 810; *Bull. Sci. Nat.* v. 104.

*Phoca*, sp., O. Fab.; *Lichtenstein*.

### 1. HALICHOERUS GRYPUS. GREY SEAL.

*Halichoerus grypus*, Nilsson, *Scand. Fauna*, i. 377. t. 34. f. 1, 2; *Wieg. Arch.* vii. 318.

*Phoca grypus*, Fab. *Nat. Selsk. Skri.* i. 167. t. 13. f. 4, skull.

*Phoca gryphus*, Licht. *Berl. Acad.* 1821, t. 1. f. 1, 2; *Blainv.*

*Ostéog. Phoca*, t. 9; *Fischer, Syn.* 239.

*Phoca hispida*, Schreb. *S.* 312. t. 86; *Hamilton*, t. 8.

*Phoca Halichoerus*, Thienem. *Nat. Bemerk.* 142.

*Phoca leporina*?, Licht. in *Haude und Spinnersch Zeitung*, n. 46.

*Phoca ochotensis*, Pallas, *Zool. Ross. Asiat.* i. 117.

*Halichoerus griseus*, Hornsch. *Isis*, 1824, 810; *Bull. Sci. Nat.* v. 104.

*Halichoerus griseus*, Nilsson, *Scand. F.* 377. t. 34. f. 1, 2; *Hamilton*, t. 10.

*Halichoerus gryphus*, R. Ball, *Trans. Roy. Irish Acad.* xviii. t. 1, male and female, t. 2, 3, skull, teeth, &c.; *Sketches Brit. Seals*, t. 1, 2 & 7.

Grey Seal, Bell, *Brit. Quad.* 284. f.

Seal from South Sea, Home, *Phil. Tr.* 1822, t. 27, skull.

Young. *Phoca Scopulicola*, Thienem. *N. Bemerk.* 59. t. 5. 1824,

♂ adult; *Bull. Sci. Nat.* v. 261; *Fischer, Syn.* 237.

*Phoca Thienemanni*, Lesson, *Dict. Class. H. N.* xiii. 415.

*Callocephalus Scopulicolus*, Lesson, *Man.* 199.

Inhab. North coast of Europe (Ireland and Scotland).

a. Adult: stuffed. Coast of Northumberland.

b. Half-grown: stuffed. Fern Island. Presented by J. P. Selby, Esq.

c. Skull of a. Fern Island.

d. Skull of b. Fern Island. Presented by J. P. Selby, Esq.

### 10. TRICHECHUS.

Muzzle very broad, truncate, swollen and convex above; muffle, palm and soles chaffy, callous, with the hair more or less worn off in the adult (hairy when young?). Cutting teeth  $\frac{1}{4}$  in young,  $\frac{3}{8}$  in adult; grinders  $\frac{4\frac{1}{4}}{4\frac{1}{2}}$  truncated, all single-rooted; canines, upper very large, exerted.

The skin is covered with small ovate scales. Nose with very rigid white compressed pellucid bristles, rounded at the end; fore-feet small, outer and hinder edge of the upper side bald, rest

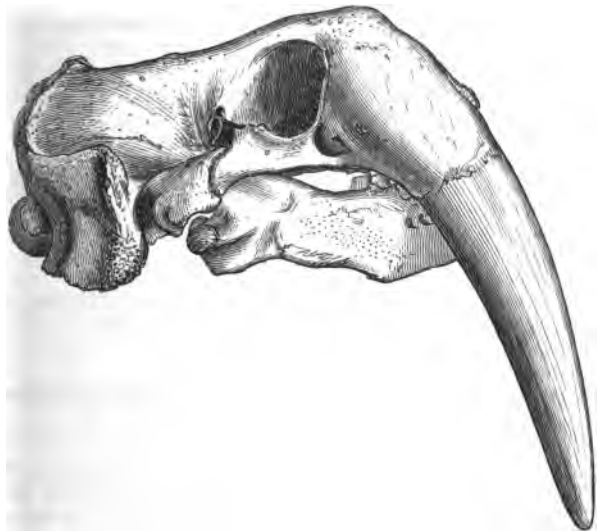


covered with hair; front claw rudimentary, skin of the soles rigid, warty; hind-feet rather large, first and fifth toes elongated, with a distinct flap and rudimentary claw; three middle ones shorter, with subacute claws. Tail rudimentary.

The skull differs from the other Earless Seals in having a distinct alisphenoid canal, like the Eared Seals, and it agrees with the Earless ones in having no postorbital process and the mastoid process strong and salient, its surface continuous with the auditory bullæ.—*Turner*.

In the young "there are in the upper jaw three incisors on each side, the first or inner extremely small, the second a little larger, and the third or outer disproportionately large, being equal to the largest grinders. The canine tooth is displaced, being thrust outwards beyond the line of the other teeth. There are five grinders with single roots, the fifth very small. In the lower jaw there are five grinders. In the adult the incisors are obliterated, ex-

Fig. 11.



*Trichechus Rosmarus*. Skull, adult.

cept the lateral pair of the upper jaw. The fifth grinder also disappears, and sometimes the fourth."—*Macgilliv. Nat. Lib.* vii.

In the very young the cutting teeth  $\frac{3}{2}$ , all, especially the two

upper lateral, deciduous; canines  $\frac{11}{17}$ , upper elongate, lower conical like the grinders; grinders  $\frac{44}{54}$ , small, rather compressed.—*Rapp. Bull. Sci. Nat.* xvii. 280.

*Odobenus*, *Brisson*, *Règ. Anim.* 48.

*Rosmarus*, *Scopoli*, *Introd. H. N.* 1777.

*Trichechus*, *Linn. Syst. Nat.* i.; *Nilsson*, *Vet. Akad. Handl.* 1837; *Scand. Fauna*, t. ; *Wiegmann*, *Arch.* vii. 322; *Fleming*, *Phil. Zool.* ii. 187; *Rapp. Bull. Sci. Nat.* xvii. 280; *Fischer*, *Syn.* 678; *F. Cuvier*, *Dict. Sci. Nat.* lix. 465, 1829.

(Tribe) *Trichecina*, *Turner*, *Proc. Z. Soc.* 1848, 88.

*Morse*, *F. Cuvier*, *Dent. Mam.* 233. t. 95, 1825.

*Trichehidæ* seu *Campodontia*, *J. Brookes*, *Mus. Catal.* 37, 1828.

M. F. Cuvier thinks the *Morse* forms an isolated family, distinguished by the great breadth of its muzzle, the length of its upper canines, and the form of its teeth. It has the same organs of movement and intestinal canal as the Seals.—*D. S. N.* lix. 465.

Professor Baer illustrates his paper with a map, showing the geographical distribution of the Walrus in the Arctic Sea.

For the chase and uses of the *Morse*, see *Wrangel*, *Nord Siberia*, ii. 319, 320.

# 1. TRICHECHUS ROSMARUS. MORSE.

Pale brown; when young black, when old nearly white.

*Trichechus Rosmarus*, *Linn. S. N.* i. 39; *Müller*, *Prod. Z. D.* 1; *Schreber*, *Saugth.* 262. t. 79; *Nilsson*, *Wiegmann*, *Arch.* vii. 322; *Blainv.* *Osteog. Phoca*, t. 1 & 4; *Fischer*, *Syn.* 243; *Baer*, *Mem. Acad. Petersb.* iv. 97. t. 4, 1838; *Mem. Mus.* vii. t. 9.

*Rosmarus arcticus*, *Pallas*, *Z. R. A.* i. 269.

*T. obesus* et *T. divergens*, *Illiger*.

*Rosmarus*, *Ol. Mag. Sept.* 757. fig.; *Gesner*, *Aquat.* 249, 250. fig.

Walross, *Nilsson*, *Scand. Fauna*, i. 388.

Walruss, *Bell*, *Brit. Quad.* 282.

*Phoca Rosmarus*, *Linn. S. N.* ed. 10. i. 38.

Arctic Walrus, *Penn. Syn.* 335; *Cook's Last Voy.* iii. 262. t. 8. fig.; *Shaw*, *Zool.* i. 234. t. 68, 69; *Nat. Misc.* t. 76.

*Morse* ou la Vache marine, *Buff. H. N.* xiii. 353, 415. t. 54, 55.

*Morsch*, *J. G. Gmelin*, *Siber.* iii. 165.

Wallross, *Mart. Spitzb.* 78. t. P. f. b; *Egede*, *Græn.* 61. fig.; *Steller*, *Kamtsch.* 106.

Inhab. North Sea. *Mus. Brit.* adult.

a. Adult: stuffed. North Sea. Greenland?

b. Skull: adult. North Sea.

c. Skull: adult. North Sea. Presented by General Thomas Hardwicke.

d. Skull of young.

e. Tooth longitudinally divided. Presented by J. E. Gray, Esq.

f. Foetus in spirits.

g, h, i. Three teeth. N. W. coast of America. Presented by Capt. Kellett, R.N., H.M.S. Herald.

Subfamily 4. Cystophorina. *Muzzle of the males with an inflatile appendage. Cutting teeth  $\frac{4}{4}$ ; grinders with a large swollen root, and a small, compressed, simple, plaited crown. Muffle hairy.*

Stemmatopina, Gray, *Ann. Phil.* 1825, 340.

Cystophorina, Gray, *Zool. Erebus and Terror*, 3.

Cystophora, Nilsson, *Vet. Akad. Hand.*; *Scand. Fauna*; Wiegmann. *Arch.* vii. 323.

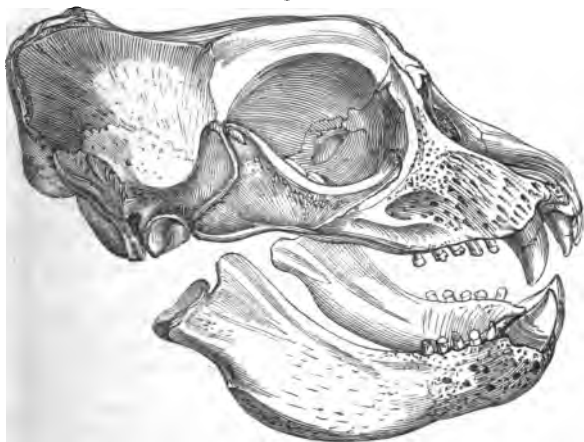
Mirounga, Gray, *Griffith, A. K.* v. 179, 1827.

Phoca § 2, F. Cuvier, *Mém. Mus.* xi. 196.

# 11. MORUNGA.

Nose of the male with an elongated tubular proboscis; muzzle of the skull broad, truncated in front; forehead convex; hinder

Fig. 12.



Morunga Elephantina. Skull.

palatine bone short, transverse. Hair flat, truncated, adpressed; whiskers round, rather waved, thick. Claws, front obsolete, hinder distinct.

The head broad, short, truncated in front, with a tuft of bristles over each eye, and one on each side of the middle of the muzzle; the upper lip longer than the lower; the forehead convex; the nostrils of the male "are wrinkled, and can be blown up into a crest" (*Forster*), "with an elongate tubular proboscis" (*Peron*); of the female simple, rounded, with a hairy muffle between and around the edge of the nostrils.

Cutting teeth  $\frac{1}{2}$ , far apart, conical, the two middle upper smaller, the rest nearly equal; the grinders with large, swollen, subcylindrical roots, and a small, compressed, simple, plaited crown; the hinder palatine bones short, transverse.

The whiskers are very long and large, roundish, very slightly compressed, rather waved.

The fore-feet are rather small, oblong, obliquely truncated, the wrist being nearly as long as the feet, with five elongated claws, the first the smallest; the hinder feet are moderate, the marginal toes upon each side large, rounded, the three middle ones very small, tapering; all clawless. The tail conical.

Fur short, hair short, flat; broad and rounded at the tip in the adult, rather more tapering in the young; hair on the lips rather longer, more slender and slightly curled.

Inhab. the Southern Ocean.

This genus has many characters in common with the Crested Seal of the North American Continent, but differs especially in the nose being provided with a proboscis, while in that genus it has a hood-like swelling proceeding up the nose to the back of the head.

The male and female are so different in size that Lord Byron mistook them for mother and young.—*Weddell, Voy.* 84.

*Mirounga*, part., *Gray, Griffith, A. K.* v. 179, 1827.

*Morunga*, *Gray, Cat. Osteol. Spec. B. M.* 33; *Zool. Erebus & Terror*.

*Macrorhinus* (*Macrorhine*), *F. Cuvier, Mém. Mus.* xi. 200. t. 13, 1827; *Dict. Sci. Nat.* lix. 464, 1829; *Fischer, Syn. Mam.* 230.

*Cystophora*, part., *Nilsson, Wiegman. Arch.* vii. 324.

*Macrorhyna* (misprint), *Gray, Griffith, A. K.* i. 180.

*Pallas (Zool. Ross. Asiat.* i. 106) describes the skull of this species as the skull of a Sea Lion, brought from the Cape of Good Hope by Mr. Tulbagh.

# 1. MORUNGA ELEPHANTINA. The SEA ELEPHANT.

A Sea Lion and Lioness from Juan Fernandez, *Anson, Voy. round the World* (1786), t. 122. t. 19, copied; *Pernetty, Voy. Isles Malouines*, ii. 47. t. 9\*. f. 1, and altered t. 8\*. f. 1;—hence

- Phoca Leonina*, Linn. *S. N.* i. 55; *Schreber, Saugth.* 297. t. 83 a. Bottle-nosed Seal, *Shaw, Zool.* i. t. 73; *Penn. Quad.* ii. 531 (with an original description of the female).
- Phoca Ansonii*, *Desm. Mam.* 239, 369 (part only).
- Mirounga Ansonii*, *Gray, Griffith, A. K.* v. 180.
- Grand Phoque à Museau ridé, *Buffon, Suppl.* vi. 316.
- Anson's Sea Lion, *Forster, Voy. round the World*, ii. 527.
- Phoca major*, &c. n. 5. "Manate from Nicaragua," *Parsons, Phil. Trans.* 1751, 121 (female).
- Phoca Elephantina*, *Molina, Saggi*, 260 (1782).
- L'Elephant marine, ou Phoque à trompe. *Phoca proboscidea*, *Peron & Lesueur, Voy. Terre Austr.* ii. 34. t. 32; *Hamilton, Seals*, t. 16, 17; *Cuvier, Oss. Foss.* v. t. 18. f. 1; *F. Cuvier, Mem. Mus.* xi. t. 14. f. 1, skull; *Dent. Mam.* 123. t. 39 a.
- Phoca Leonina*, *Blainv. Osteol. Phoque*, t. 5, 9.
- Phoca proboscidea*, *Hamilton, Jardine, Nat. Lib.* t. . *Mus. Liverpool.*
- Cystophora proboscidea*, *Nilsson, Vet. Akad. Hand.* 1837; *Scand. Fauna*; *Wieg. Arch.*
- Mirounga proboscidea*, *Gray, Griffith, A. K.* v. 180, 1827.
- Morunga elephantina*, *Gray, Cat. Osteol. Spec. B. M.* 33.
- Leo marinus* (Cap. B. S.), *Pallas, Zool. Ross. Asiat.* i. 106.
- Sea Elephant, *Weddell, Voy.* 53, 84, 134.
- Macrorhynchus proboscideus*, *Gray, in Brookes's Mus. Cat.* 36, 1828.
- Phoque gris argente à os nasaux très courts, *Mus. Paris, from M. Dubison = Cuvier, Oss. Foss.* v. 213; *Nilsson, Wieg. Arch.* vii. 325;—hence
- Phoca dubia*, *Fischer, Mamm.* i. 235.
- Phoque des Patagons, *F. Cuvier, Mem. Mus.* i. 203. t. 14. f. 2. d, e, f.
- Mirounga Patagonica*, *Gray, Griffith, A. K.* v. 186.
- Stenmatopus Patagonicus*, *J. Brookes, Cat. Mam.* 36, 1828.
- Inhab. Southern Ocean.
- a. Skull of young. Antarctic Ocean.
  - b. Adult: stuffed. Antarctic Ocean. Presented by the Admiralty.
  - c. Skeleton of b. Antarctic Seas, Antarctic Expedition. Presented by the Admiralty.
  - Skull figured *Zool. E. & T.* t. .
  - d. Skin. With skull.
  - e. Skin of young male. Cape of Good Hope?
  - f. Skull. Antarctic Seas, Antarctic Expedition. Presented by the Admiralty.
  - g. Skull and imperfect skeleton of young. Antarctic Seas, Antarctic Expedition. Presented by the Admiralty.
  - h. Skeleton of specimen e. Cape of Good Hope. From Mr. Bartlet's Collection.

## 12. CYSTOPHORA.

Nose of the male with a large compressed hood, extending to the back of the head; muzzle very broad, hairy; nostrils large; muzzle of the skull broad, narrowed on each side in front; forehead flat; palatine bone broad, square; hair elongate, cylindrical; whiskers flat, waved; claws 5-5, distinct.

*Cystophora*, Gray, *Zool. Erebus & Terror*, 4.

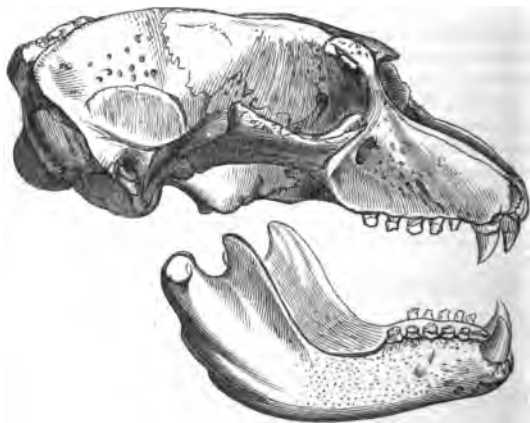
*Cystophora*, sp., Nilsson, *Vet. Akad. Hand.* 1837; *Scand. Fauna*; *Wieg. Arch.* vii. 326.

*Mirounga*, part., Gray, *Griffith, A. K.* v. 463.

*Stenmatopus* (*Stenmatope*), F. Cuvier, *Mem. Mus.* xi. 196. t. 13, 1827; *Dict. Sci. Nat.* lix. 464; *Fischer, Syn.* 230.

The young is like the young of *Pagophilus grænländicus* in external appearance, but it is easily known from that species by the hairiness of the muffle between the nostrils, and by the teeth

Fig. 13.

*Cystophora cristata*. Skull.

not being lobed, but only plaited on the surface. See also Nilsson, *Wieg. Arch.* vii. 320.

## 1. CYSTOPHORA CRISTATA. HOODED SEAL.

Outer cutting teeth and the canines narrow, compressed.

*Phoca cristata*, *Erxl. Syst.* 590; F. Cuv. *Mem. Mus.* xi. 196. t. 13. f. 3; *Fab. Nat. Selsk. Skri.* i. 120. t. 12. f. 2; *Dekay*,

- Ann. Lyc. N. Y.* 1. t. 7; *Fischer, Syn. Mam.* i. 241; *Blainv. Osteog. Phoca*, t. 5, skull, t. 9, teeth; *Hamilton*, t. 14.
- P. mitrata*, *Milbert, MS.*; *Cuv. Oss. Foss.* v. 210. t. 18. f. 3; *F. Cuv. Dent. Mam.* 122. t. 39. t. 38 B; *Fischer, Syn. Mam.* 241; *Hamilton, Seals*, t. 13.
- P. leucopla*, *Thienem.* 102. t. 13 (young); *Bull. Sci. Nat.* v. 261; *Fischer, Syn.* 257, 675.
- Mirounga cristata*, *Gray, Griffith, A. K.* v. 463.
- Cystophora cristata*, *Nilsson, Vet. Akad. Hand.* 1837; *Scand. Faun.*; *Wieg. Arch.* vii. 327; *Gray, Proc. Zool. Soc.* 1849, 91; *Cat. Ost. Coll. B. M.* 32.
- Stenmatopus cristatus*, *F. Cuvier, Dict. Sci. Nat.* xxxix. 551; *Mem. Mus.* xi. 196. t. 13. f. 3, g, h, i.
- Stenmatopus mitratus*, *Gray, in J. Brookes's Mus. Cat.* 36, 1828.
- P. leonina*, *Linn. S. N.* i. 55.
- P. leonina*, *Mohr. Isl. Nat.* 2; *Müller, Prod. Z. Dan.* viii.; *O. Fab. Faun. Græn.* 7.
- Cystophora borealis*, *Nilsson, Scand. F.* i. 383.
- P. cucullata*, *Bodd. Elench.* 107.
- Phoca dimidiata*, *Cretzschmar, fide Rüppell.*
- Seal with a Caul, *Ellis, Hudson's Bay*, 134. t. 6. f. 4.
- Klapmyds*, *Egede, Grænl.* 46.
- Klap myssen*, *Egede, Grænl.* 62.
- Hooded Seal, *Penn. Syn.* 342; *Shaw, Zool.* i. 262.
- Inhab. North Atlantic. *Brit. Mus.*

Very young, grey, without spots when wet. Called *Blue-backs* in Newfoundland.

- a. Skin, stuffed, of adult male.
- b. Ditto ditto.
- c. Skin, stuffed, of adult female.
- d. Skin, stuffed, of half-grown young.

*Phoca leucopla*, *Thienem. Bemerk.* t. 13, 1824.

*Phoca mitrata*, *Milbert in Cuv. Oss. Foss.* v. 210.

a. Skull of adult. Crowns worn, the roots of the 1st, 2nd, 3rd and 4th rather enlarged, oblong club-shaped, rather elongate; the root of the 5th grinder compressed, of the left side simple, of the right partially divided into two short roots continued in grooves on each side. Greenland. Specimen described *Proc. Zool. Soc.* 1849, 92. No. 1.

b. The skull of an adult or aged specimen. Greenland. The crowns plaited, the roots of all the grinders enlarged and short, club-shaped and simple, separated from the crown by a narrow collar. Specimen No. 1 described *P. Z. S.* 1849.

c. Skull of an aged specimen. Greenland. The crowns plaited and tubercular, the roots of the grinders rather enlarged;

the roots of the 3rd grinder rather compressed, simple, with a groove on the outer side of the 4th and 5th grinders, scarcely enlarged, and divided into two distinct diverging roots. Specimen described No. 3. *P. Z. S.* 1849, 92.

*d.* Skull, without lower jaw, of nearly adult. Greenland. Wanting the grinders; but the cavity for the grinders shows that the 4th grinder on both sides had a short clavate root, with a slight central groove on the outer side, and the 5th grinder on each side had two separate roots. Specimen described No. 5. *Gray, P. Z. S.* 1849, 92.

*e.* Skull of a half-grown animal. Greenland. The crown of the grinders plaited and tubercular, the 4th grinder on each side with ovate, short, simple roots, and the 5th grinder with compressed, truncated, simple roots; the grinders are rather further apart than in the other skull. Specimen described No. 6. *P. Z. S.* 1849, 92.

*f.* Skull of a very young animal. Greenland. The crowns of grinders are very distinctly plaited; the 4th and 5th grinders of both sides have two distinct roots, and the 3rd grinder has a groove down the middle of the outer side. In all these skulls the grinders are close together, forming a nearly continuous line. Specimen described, *Gray, P. Z. S.* 1849, 92. No. 7.

*g.* Skull of nearly adult. Greenland. The crown of few grinders remaining plaited; the root of the 4th and 5th grinder of the left side, as shown by the cavities, divided into two roots; of the 4th grinder of the right side simple, with a slight groove on the outer side; and of the 5th grinder two-rooted, like the similar grinder on the outer side. Specimen described, *Gray, P. Z. S.* 1849, 92. No. 4.

## 2. CYSTOPHORA ANTILLARUM. WEST INDIAN HOODED SEAL.

Skull, face broad. The outer upper cutting teeth and the canines broad, strongly keeled on each side and longitudinally plaited within. Fur grey brown, lips and beneath yellow.

*Cystophora antillarum*, *Gray, Proc. Zool. Soc.* 1849, 93.

Inhab. West Indies.

*a.* Stuffed specimen. West Indies, Jamaica. Mr. Gosse's Collection.

*b.* Skull of a very young specimen. The face is broader than the skull of *C. cristata* of the same size. The crowns of the teeth are plaited and tubercular. The 4th grinder has only a single root, the 5th grinder has two. West Indies, Jamaica. Mr. Gosse's Collection.

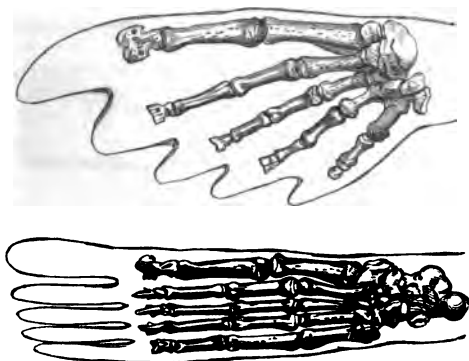
Specimen described, *Gray, Proc. Zool. Soc.* 1849, 93.



Subfamily 5. *Arctocephalina*. Ears with a subcylindrical, distinct, external conch. Toes of the hind-feet subequal, short, with long membranes at the end: fore-feet fin-like: palm and soles bald, longitudinally grooved. Nose simple, with a rather large callous muffle above and between the nostrils: cutting teeth  $\frac{1}{2}$ , upper often bifid; grinders  $\frac{6}{6}$ .

The skull has a postorbital process, an alisphenoidal canal, the mastoid process strong and salient, standing aloof from the auditory bullæ.—Turner.

Fig. 14.



*Arctocephalus Hookeri*. Fore- and hind-feet.

*Arctocephalina*, Gray, *Zool. Erebus & Terror*, 4; Turner, *Proc. Zool. Soc.* 1848, 88.

Otaria, Peron, *Voy. Terre Aust.* ii. 118; *Desm. Mamm.* 248; Fleming, *Phil. Zool.* ii. 187; Gray, Griffith, *A. K.* v. 182; Nilsson, *Vet. Akad. Hand.* 1837; *Scand. Fauna*; Wiegman, *Arch.* vii.

Phoca § 3, F. Cuvier, *Mem. Mus.* xi. 205.

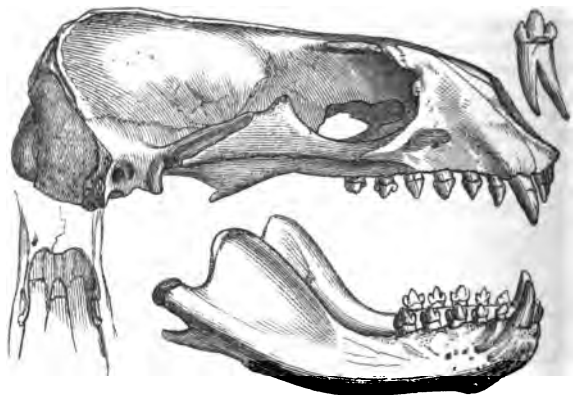
Otariadæ, J. Brookes, *Mus. Cat.* 36, 1828.

### 13. ARCTOCEPHALUS, F. Cuv.

Muzzle rather tapering in front. Cutting teeth  $\frac{1}{2}$ , upper nearly square. Grinders  $\frac{6}{6}$ . Palate of the skull rather narrower behind than in front; short, scarcely reaching to the middle of

the zygomatic arch. Lower jaw-bone narrow, rounded below, without any angle behind.

Fig. 15.



*Arctocephalus Hookeri*. Skull, palate and grinder.

Nose simple, with a rather large callous muffle above and between the nostrils. Whiskers cylindrical, thick, round, tapering, not waved, hinder ones largest. Ears with a subcylindrical, distinct, external conch.

The fore-feet elongate. The palms bald, longitudinally grooved. Claws 5, very small, rudimentary, scarcely visible. Hind-limbs rather produced. The legs free. The hind-feet elongated: the soles bald, longitudinally grooved: the toes subequal, short, webbed, and each furnished with a long membranaceous expansion, the web and the membranaceous expansion bald.

*Arctocephalus* (*Arctocephale*), *F. Cuvier, Mem. Mus. xi. 205. t. 15. f. 1*; *Dict. Sci. Nat. lix. 463, 1829*; *Fischer, Syn. 230*; *Gray, Zool. Erebus & Terror*; *Turner, P. Z. S. 1848, 88*.  
*Otaria, sp., Peron*; *Nilsson*.

Dr. J. Müller described three species from the skulls only viz. *O. Stelleri*, *O. Chilensis*, and *A. Lamairii* from Australia.

In the Leyden Museum (1845) there are four specimens of *Fur Seal*, all named *Otaria Ursina*; they are of a black or dark grey colour, with white tips to the hair and reddish under-fur: the largest is 4 feet long:—one is from Isles Aleutiennes, one from New Holland, and two from Isles Crussettes.

The *Hair Seals* in the same museum, and the skull from

Brookes's Museum, which I described as *Arctocephalus lobatus*, are called *O. Stelleri*: some are said to come from Japan and others from New Holland.

In King (*Narrat. Austral.* ii. 414, 1828) I pointed out the distinction between the *Fur Seal* of New South Shetland and the *Hair Seal* of Australia.

The skull from the cabinet of M. Faujus which Cuvier figures (*Oss. Foss.* v. 222. t. 18. f. 4), is much more like the skull of an adult *Arctocephalus* than of *Otaria jubata*; the outer and upper cutting teeth are scarcely larger than the others.

There are ten skulls of this genus in the Paris Museum:—

1, 2. From the Cape of Good Hope. Adult and half-grown. The palates become narrower behind. The front outer upper cutting rather large: grinders large, all except first and hinder upper with two lobes.—See *Cuv. Oss. Foss.* 221. t. 18. f. 5.

3. Old skull from Parzudasky.

4. From Australia, by MM. Quoy and Gaimard.

5. Adult. From Port Jackson. *P. cinerea*. Very little different from the adult from the Cape of Good Hope.

6, 7. Imperfect. King George's Sound. MM. Quoy and Gaimard (*Cuv. Oss. Foss.* 222; *Blainv. l. c.* 300).

8. Adult. Auckland? The Zélée, 1841.

9, 10. From America, by M. D'Orbigny. The grinders larger, more acute, and rather further apart.

\* *Fur long, under coat thick, soft, silky.* Fur Seals.

# 1. ARCTOCEPHALUS URSINUS.

"Hair long, erect, thick, under-fur brownish red. Males black, older ones with the hairs white-tipped, the hair of the neck longer and stiff; females ash-coloured; of the very young black; flaps of hinder toes very long, slender. Length 8 or 9 feet."

*Ursus marinus*, *Steller, Nov. Com. Petrop.* ii. 331. t. 15 (copied in).

*Phoca ursina*, *O. Fab. Fauna Græn.* 6?; *Schreb.* iii. 289. t. 82; *Gmel. S. N.* i. 62; *Shaw, Zool.* i. 265. t. 72; *Fischer, Syn.* 231; *F. Cuv. Mem. Mus.* xi. 205. t. 15. f. 1, skull?

*Otaria ursina*, *Desm.*; *Peron & Lesueur, Voy.* ii. 41; *Nouv. Dict. H. N.* xxv. 595; *Mam.* 249; *Gray, Griffith, A. K.* v. 182.

*Otaria ursina*, var. *Mus. Leyden.*

*Otaria Fabricii*, *Lesson, Dict. Class. H. N.* xiii. 419, from *O. Fab.*

*O. Krachenninikovii*, *Lesson, Dict. Class. H. N.* xiii. 420.

*Chat marine*, *Krachenninikow, Hist. Kamtsch.* i. 306.

*Arctocephalus ursinus*, *F. Cuv. Dict. Sci. Nat.* xxxix. 554 ; *Gray*, in *Brookes's Cat. Mus.* 37 ; *Zool. Ereb. & Terror*, 3 ; *Nilsson*, *Wieg. Arch.*

*Ursine Seal*, *Penn. Hist. Quad.* ii. 526, 531.

*Ours marin*, *Buffon, Supp.* vi. t. 47 ; *Cuv. Règ. A.* i. 167.

*Sea Bears*, *Forster, Cook's Second Voy.* ii. 203.

*Young. Phoca nigra*, *Pallas, Zool. Ross. Asiat.* 107 ?

*Inhab.* Northern Pacific Ocean, Kamtschatka. Greenland, *O. Fab.*

Skins collected to sell to the Chinese.—*Pallas.*

*Pallas* described a small Seal from the Curil Islands, which he regards as the same as *la Petit Phoque* of *Buffon* (*P. pusilla*, *Gmelin*), under the name of *P. nigra*, *Pallas, Zool. Ross. Asiat.* i. 107.

## 2. ARCTOCEPHALUS FALKLANDICUS.

Grey, under-fur red, young blackish. Length 4 feet.

*Sea Bear*, *Forster, Voy.* i. 174, ii. 528.

*Fur Seal*, *Clayton, Phil. Trans.* lxvi. 102 ; *Weddell, Voy.* 23, 134, 137.

*Ursine Seal* (part.), *Penn. Quad.* ii. 527.

*Ours marin*, *Buffon, H. N. Supp.* vi. 336. t. 47.

*Otaria Forsteri*, *Lesson, D. C. H. N.* xiii. 421.

*Phoca Forsteri*, *Fischer, Syn.* 232.

*Falkland Isle Seal*, *Penn. Quad.* i. 275, ii. 521 (from *Roy. Soc.*).

*Phoca Falklandica*, *Shaw, Zool.* i. 256 ; *Gray, in King's Narrat.*

*Australia*, ii. 414 ; *Griffith, A. K.* v. 183.

*Otaria Falklandica*, *Desm. Mamm.* 252 ; *Fischer, Syn.* 233.

*O. Shawii*, *Lesson, D. C. H. N.* xiii. 424.

*Seal or Sea Bear of Forster*, *Hamilton, Nat. Library*, 261. t. 22.

*Otaria Falklandica* (*Fur Seal of commerce*), *Hamilton, Nat. Lib.* t. 25 ; *Ann. N. H.* ii. 81. t. 4, 1839.

*Otaria Guerin*, *Quoy et Gaim. Voy. Uran.* 71.

*Platyrrhinus Uranixæ*, *Lesson, Man.* 204.

*Young.* Blackish.

*Petit Phoque*, *Buffon, H. N.* xiii. 341. t. 43 (young).

*Little Seal*, *Penn. Quad.* ii. 526.

*Phoca parva*, *Bodd. Elench.* 78.

*P. pusilla*, *Schreb. Saugth.* 314. t. 85 ; *Gmel. S. N.* i. 68.

*Otaria pusilla*, *Desm. N. Dict. H. N.* xxv. 600.

*O. Delalandii*, *F. Cuv. D. S. N.* xxxix. 423.

*O. Peronii*, *Desm. Mamm.* 250 ; *E. M.* t. 111. f. 2 ; *Gray, Griffith, A. K.* v. 182.

*Otaire de Peron*, *Blainv. Journ. Phys.* xci. 295.

*Otaria Hauvillii*, *Lesson, D. C. H. N.* xiii. 425.

*Phoca Hauvillii*, *Fischer*, *Syn.* 243, both from *Cuv. Oss. Foss.* v. 220.

Sea Bear, in *Brit. Mus.*, *Hamilton*, *Nat. Lib.* 266. t. 23.

*Phoca pusilla*, adult? *Cuvier*, *Oss. Foss.* v. 220. t. 18. f. 5, skull.

*Otaria ursina*, var. *Mus. Leyden*.

? *Phoca porcina*, *Molina*, *Sag.* 260; *Shaw*, *Zool.* i. 260; *Fischer*, *Syn.* 234.

Porcine Seal, *Penn. Syn.* 178.

*Otaria porcina*, *Desm. N. Dict. H. N.* xxiv. 602.

*Otaria Molinæi*, *Lesson*, *Dict. Class. H. N.* xiii. 425.

? *Otaria chilensis*, *J. Müller*, *Wieg. Arch.* 1841, 333 (skull only).

? *Otariæ Ulloæ*, *Tschudi*, *Consp. Mamm. Peru.*; *Fauna Peru. Mamm.* t.

? Long-necked Seal, *Grew. Mus.* 95; *Parsons*, *Phil. Trans.* xvii. t. 6; *Penn. Quad.* ii. 521.

*Phoca longicollis*, *Shaw*, *Zool.* i. 256.

*Phoca Weddellii*, var., *Fischer*, *Syn.* 240.

? *Otaria coronata*, *Blainv. in Desm. Mamm.* 251; *Gray*, *Griffith*, *A. K.* v. 182.

Inhab. Antarctic Ocean, Falkland Islands, *Cook*. New Georgia, *Cook*. South Orkney and South Shetland, *Weddell*. Cape of Good Hope. *Chili*, *Molina*.

a. Skin of adult, female, without skull.

b. Skin of young with the under-fur grey. Falkland Islands. ("The adult is 5 feet long, and its skin worth 15 dollars.") Presented by Sir John Richardson, M.D.

c. Skin of young with the under-fur dark brown. Cape of Good Hope?

d. Skin of young with the under-fur dark brown. Cape of Good Hope.

A skull of a very young specimen. Cape of Good Hope? or Falkland Islands? Presented by Sir John Richardson.

### 3. ARCTOCEPHALUS CINEREUS.

Grey, hair of neck rough, elongate, yellowish, hairs yellowish white and blackish; under-fur red. Length 7 feet.

*Otaria cinerea*, *Peron*, *Voy. T. Aust.* ii. 54? 77; *Desm. Mamm.* 251; *Quoy et Gaim.* *Voy. Astrol. Mamm.* 89. t. 12, 13 & 15.

*Phoca cinerea*, *Fischer*, *Syn.* 233?

*Otarie* (Oran du M. Gaimard), *Cuvier*, *Oss. Foss.* v. 222.

*O. ursina*, var. *Mus. Leyden*.

Young. Darker, hair black, silky.—*Quoy*, *J. c.* t. 13.

? Black Seal, *Bennett*, *Cat. Aust. Mus.* 7?

Inhab. South coast of Australia. Imperfect skull, *Mus. Paris*. Port Western, *Quoy*. Kangaroo Island, *Peron*?

Peron indicates a species from Eugene Island, Australia, under the name of *Otaria albicollis*, *Peron et Lesueur, Voy. ii. 118; Desm. Mamm. 251. Phoca albicollis, Fischer, Syn. 233.*

Cuvier observes, this species has the arms placed far forwards, and not as in other *Otariæ*.—*Oss. Foss. v. 223.*

Cuvier observes, "the only *Otaria* brought home by Peron, hence probably his *O. cinerea*, was 2 feet 9 inches long; it is rather whiter than the specimens from the Cape." The skull is not mentioned.—*Oss. Foss. v. 221.*

Peron, in speaking of the productions of Isle de Decrees, says they found a new Seal 9 or 10 feet long. "The hair of this animal is very short, very hard, and very thick (*très grossier*); but its skin is thick and strong, and the oil abundant."

**\*\* Fur short, close-pressed, without any under-fur. Hair Seals.**

#### 4. ARCTOCEPHALUS LOBATUS.

The flaps to the hind-toes short, not so long as the toes: canines large, rugulose, thick at the base; grinders large, with a rugose keel round the inner side of the base; the 1st and 2nd with one small lobe; 3rd, 4th and 5th grinders with a distinct front and hinder lobe.

*Otaria cinerea*, Gray in King, *Narrat. Australia*, ii. 413; Griffith, *A. K. v. 183* (not Peron?), 1827.

*Arctocephalus lobatus*, Gray, *Spic. Zool. i. t.*, skull; *Bull. Sci. Nat. xvi. 113*; in *J. Brookes's Cat. Mus. 37, 1828.*

*Phoca lobata*, Fischer, *Syn. ii. 574.*

? *Otaria Lamairii*, J. Müller, *Wieg. Arch. 1841, 334.*

*Otaria Stelleri* (*Mus. Leyden, 1845*), *Faun. Japon. t. 21, 22, 23*, animal, t. 22. f. 3, skull.

*Otaria jubata*, part., Gray, *Cat. Osteol. Coll. B. M. 33.*

Young covered with soft fur, which falls off when the next coat of fur is developed.

Inhab. N. W. coast of Australia. Houtman's Abrolhos, Mr. Gilbert.

a. Skin of half-grown. Port Essington.

b. Skin of half-grown. Port Essington.

c. Skin of half-grown. Port Essington.

d. Jaws of skull, half-grown. Houtman's Abrolhos, Australia. From Mr. Gould's Collection.

e. Lower jaw, half-grown. Houtman's Abrolhos, Australia. From Mr. Gould's Collection.

f. Teeth, very young. Houtman's Abrolhos, Australia. From Mr. Gould's Collection.

g. Teeth, very young. Houtman's Abrolhos, Australia. From Mr. Gould's Collection.

h. Stuffed skin of adult. Black, forehead and crown pale yellowish. N. W. Australia. Presented by Capt. Sir George Grey, K.C.B.

i. Skull of h. Adult, very rugose, very like skull adult of *Otaria Leonina*, but the palate is short and much contracted behind, the teeth more lobed, and with a tubercular ridge below, like the younger skulls. N.W. Australia. Presented by Capt. Sir George Grey, K.C.B.

## 5. ARCTOCEPHALUS AUSTRALIS.

The flaps to the hind-toes moderate; grey, with yellow reflections; head, cheeks, and side of muzzle whitish, beneath fulvous; neck thick; limbs beneath blackish; whiskers strong, flat, white.

*Otaria australis*, Quoy et Gaim. *Voy. Astrol. Mam.* 9. t. 10-14; Nilsson, *Vet. Akad. Hand.* 1837; *Fauna Scand.*; Wiegman. *Arch.* vii. 322.

Inhab. South coast of Australia, "King George's Sound," Quoy. Most probably the same as the former.

## 6. ARCTOCEPHALUS HOOKERI.

Flaps of the hinder toes elongate, unequal, of the outer toes on each side longest: canines moderate: pale yellowish.

Canines slender, conical: grinders small, conical, smooth, without any tubercles at the base; the two front smaller; the 3rd and 4th with a single lobe in front; the 5th with a lobe in front and behind: whiskers round, very thick, black or whitish, smooth, not waved, hinder largest: fur brown grey, slightly grised, pale, nearly white beneath; hair short, close-pressed, rather slender, flattened, black with whitish tips, the tips becoming larger in the underpart of the sides: feet reddish or blackish; front claws small, rudimentary; hind claws 5, the 2nd and 3rd largest, the 4th and the 5th and then the 1st smallest; toes moderate; membrane of the toes elongate, longer than the toes, the outer one broadest and largest, the rest nearly equal.

*Arctocephalus Hookeri*, Gray, *Voy. Erebus & Terror*, t. ; *Cat. Osteol. Spec. B. M.* 33.

Hair Seal, Weddell, 141?

Inhab. Falkland Islands and Cape Horn.

a. Skin, stuffed. Falkland Islands.

b. Skin, stuffed, with teeth. Falkland Islands.

c. Skeleton, full-grown. Falkland Islands. Antarctic Expedition. Presented by the Admiralty.

Skull figured *Zool. Voy. Erebus & Terror*, t. .

*d.* Skeleton. Antarctic Expedition. Presented by the Admiralty.

*e.* Skull, imperfect. Antarctic Expedition. Presented by the Admiralty.

*f.* Skull, imperfect. Antarctic Expedition. Presented by the Admiralty.

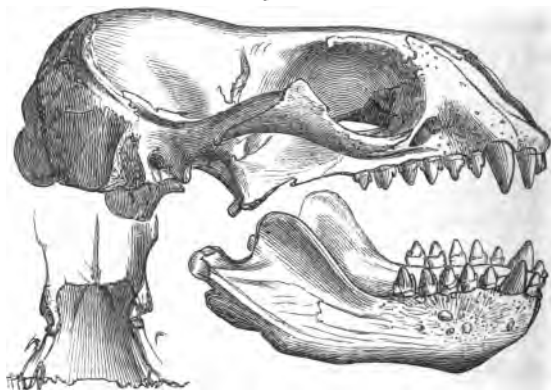
*g.* Skull. South Sea. Mr. Warwick's Collection.

The Eared Seal, *Pennant*, *Quad.* 268; *Phoca flavescens*, *Shaw*, *Zool.* i. 260. t. 73; *Otaria flavescens*, *Desm. Mam.* 252; *Gray*, *Griffith*, *A. K.* v. 183; 22 inches long, may be a young specimen of this species, but it is not stated if this Seal has under-fur or not. The young of *O. Forsteri* of the size mentioned is blackish.

#### 14. OTARIA, *Peron.*

Muzzle broad, high in front; forehead rather convex, occiput high; cutting teeth  $\frac{3}{2}$ , the upper outer ones very large, like canines; grinders (of the adults) with very large roots, and small, compressed, lobed crowns; palate bone rather wider behind than in front, long, extending nearly to the articulation of the lower jaw behind; lower jaw broad, dilated below in front and behind at the angles; the upper jaw elongate and dilate with age.

Fig. 16.



*Otaria Leonina.* Skull.

Head short, broad; chin large; muzzle truncated; muffle bald, between and above the nostril forms a distinct disk; ears small, short, conical.



Fore-feet rather large; claws indistinct; tail very short, conical; hind-feet large, with the three middle claws long, subcylindrical, the 5th or inner one rudimentary; toe-flaps very long, the outer one broad, 2nd, 3rd and 4th rather longest and narrow, the 5th shortest, all much longer than the very short toes; fur rather rough, of the head, neck and chin longer; hair cylindrical; under-fur none.

The skulls of the adult *Arctocephali* have been mistaken for the skulls of this genus, but the form of the hinder part of the palate, which is little altered by the age of the specimens, at once separates the two genera. I was formerly inclined to believe that the form of the hinder part of the palate altered, but the examination of the skin, with its skull attached, of an adult *Arctocephalus lobatus*, has proved the error of this theory.

*Otaria*, sp., *Peron & Lesueur, Voy. Terr. Austr.; Desm. Mam.; Nilsson, Vet. Akad. Hand.* 1837; *Scand. Fauna*, t. ; *Wieg. Arch.* vii.

*Platyrrhynchus* (*Platyrrhinque*), *F. Cuvier, Mem. Mus.* ix. 209. t. 15. f. 2; *Dict. Sci. Nat.* lix. 465; *Gray, in Brookes's Cat. Mam.* 37, 1828; *Fischer, Syn. Mam.* 231.

*Otaria*, *Gray, Zool. Erebus & Terror; Turner, P. Z. S.* 1848, 88. *Platyrrhinus*, *Lesson, Mam.* 204.

## 1. OTARIA STELLERI. NORTHERN SEA BEAR.

Reddish, females tawny.

*Otaria Stelleri*, *Lesson, D. C. H. N.* xiii. 420; *J. Müller, Wieg. Arch.* vii. 330, 333.

*Leo marinus*, *Steller, Nov. Comm. Petrop.* ii. 360.

*Phoca jubata*, *Gmel. S. N.* i. 63, part.

*Otaria jubata*, *Peron et Lesueur, Voy.* ii. 40 (not *Desm.*).

Leonine Seal (part.), *Penn. Quad.* ii. 534.

*Phoca Stelleri*, *Fischer, Syn.* 231.

*Otaria Californiana*, *Lesson, D. C. H. N.* xiii. 420, from

Lion Marin de la Californie, *Chloris, Voy. Pict.* t. 11.

*Phoca Californiana*, *Fischer, Syn. Mam.* 231.

*Otaria jubata* (part.), *Nilsson, Vet. Akad. Hand.; Scand. Fauna; Wieg. Arch.* vii. 381.

Inhab. Northern Pacific Ocean.

## 2. OTARIA LEONINA. SOUTHERN SEA BEAR.

Deep brown.

Sea Lion, *Cook, Voy.* ii. 203; *Forster, Voy. round the World*, ii. 512; *Weddell, Voy.* 198.

Leonine Seal (part.), *Penn. Quad.* ii. 534.

Lions marins, *Pernetty, Voy.* ii. 47. t. 10.

*Otaria Pernetzii*, Lesson.

*Phoca jubata*, Schreb. *Saughth.* 300. t. 83.

*Otaria jubata*, Desm. *Mam.* 248, 380 (E. M. t. 109. f. 3); Gray, Griffith, A. K. v. 184.

*Otaria Pernettyi*, Lesson, *Dict. Class. H. N.* xiii. 420.

*Phoca Scout*, Bodd. *Elench.* 172.

Le Lion Marin, Buffon, *H. Supp.* vi. 358. t. 48 & 49; Forster, *Cook's Voy.* iv. 54 (from Forster MSS.), copied.

Leonine Seal, Shaw in *Zool.* i. 270. t. 74 (altered).

Forster's Sea Lion, Hamilton, *Nat. Lib.* t. .

*Otaria Forsteri*, Lesson.

*Phoca Ansonina*, Blainv. *Journ. Phys.* 1820, 299.

Phoque à crinière, Cuvier, *R. A.* i. 167.

*Phoca Leonina*, Blainv. *Osteog. Phoca*, t. 6, skull, and t. 9, dentition.

*Phoca Leonina*, Molina, *Sagg.* 282-341.

*Otaria Leonina*, Peron, *Voy.* ii. 65.

*Phoca Byronii*, Blainv. in *Desm. Mam.* 240.

*Mirounga Byronii*, Gray, Griffith, A. K. v. 181.

Sea Lion, Island of Tinian, Byron in *Mus. Coll. Surg.*

*Otaria*, sp., Cuvier, *Oss. Foss.* v. 223.

*Platyrrhynchus* (leoninus), F. Cuv. *Mem. Mus.* xi. 208. t. 15. f. 2, adult skull; J. Brookes, *Mus. Cat.* 37.

*Otaria platyrrhynchus*, Müller, *Wieg. Arch.* 1841, vii. 333.

*Phoca jubata*, Pander & D'Alton, t. 3. f. D. t. 2. f.

*Otaria Molossina*, Lesson, *Voy. Cog.* 109. t. 3, young; fide skull *Mus. Paris.*

*Phoca Molossina*, Lesson, *Bull. Sci. Nat.* viii. 96.

Lesson's Otary, Hamilton, *Nat. Lib.* t. 24, from Lesson.

*Platyrrhynchus molossinus*, Lesson, *Man.* 203.

P. Urania, Lesson, *Man.* 204?

*Otaria Guerin*, Quoy & Gaim. *Zool. Uran.* 71?

Sea Lion of Forster, Hamilton, *Nat. Lib.* t. 18.

Sea Lion of Pernetty, Hamilton, *Nat. Lib.* t. 19, from Edinb. Mus.

Sea Bear of the British Museum, Hamilton, *Nat. Lib.* t. 23?

Inhab. Southern Pacific Ocean. Patagonia.

a. Skin of adult, stuffed. West coast of S. America. Vera Cruz. Presented by Capt. Fitzroy, R.N.

b. Front of lower jaw of a. West coast of S. America. Vera Cruz. Presented by Capt. Fitzroy, R.N.

c. Skull of half-grown. West coast of S. America. Peru? From Mr. Bridges' Collection.

d. Skull, young. W. coast of S. America. Presented by Sir John Richardson, M.D.

THE END.

Printed by RICHARD and JOHN E. TAYLOR, Red Lion Court, Fleet Street.





British

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1852

H.N. 1240

*1710 1240*  
**CATALOGUE**

*Hu 1240*  
**OF THE SPECIMENS OF**

**M A M M A L I A**

**IN**

**THE COLLECTION**

**OF THE**

**BRITISH MUSEUM.**

**PART III.**

**UNGULATA FURCIPEDA.**

**LONDON:**

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**1852.**

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## P R E F A C E.

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**THE** chief object in preparing the present Synopsis has been, to give at one view a complete Catalogue of all the specimens of Mammalia, and their Osteological remains, at present in the British Museum Collection, and an account of the species known to exist in other collections, but which are at present desiderata in the British Museum, so as to enable travellers, collectors, and others, to assist in completing the National Collection. For this purpose, a short description has been given of all the genera and species at present known to exist in the different museums and private collections, and at the end of each description is added an enumeration, stating the state, age, country, and other peculiarities of each specimen of the kind in the Museum Collection; or when the species is not at present in that Collection, the museum, in which it has been observed, is added after the general habitat of the species.

The different individuals of each species contained in the British Museum Collection are indicated by the letters *a*, *b*, *c*, &c. When the age of the specimen is not stated, it is to be understood that it is full-grown, or nearly so; when other-

wise, its state is marked immediately after the letter by which it is distinguished ; and if the sexes are known, it is stated to be male or female. These particulars are followed by the habitat, which is given as particularly as the materials possessed by the Museum permit. Those specimens which have been presented to the Museum have the name of the donor marked immediately after the habitat. When there is no such indication, the specimens have been either purchased or procured in exchange ; and in this case, whenever the place or person from whence they have been received gives authenticity to the specimen, or adds anything to their history, they are noted as being from such or such a collection.

The various synonyms have been given to the different divisions of the class, and to the genera and subgenera and species, and a reference made to the works in which they have been characterized or described.

In the adoption of the names for these divisions and for the names of the genera and species, it has been thought right to use, whenever it was possible, that which was first used for the purpose. As far as regards the specific name, there is comparatively little difficulty in the application of this simple rule ; but ordinal, and especially generic names, have been used by different authors in senses so widely different, and the groups which they are intended to designate have been so variously extended and restricted, that it is no easy matter to determine, where several names have been used, which of them ought to be preferred. As every original observer will constantly make use of characters which others may have overlooked, or not thought of so much importance as further researches have shown to belong to it, even when a generic name is used, it will of necessity be often employed in a different sense, or with a more restricted

or very rarely a more extended meaning than its original proposer applied to it. If this was not allowed, many new names must be added to the list of genera, which is already so overburdened with synonyma. In those cases where the two sexes of the same species, or any particular individual state or variety belonging to it, have been differently named, the names belonging exclusively to the state or individual described are placed after the reference to the specimens to which they apply. To determine with accuracy the names and synonyma of the species, the various specimens, skeletons and other remains of Hoofed animals in the Museums of the Zoological Society, of the East India Company, of the Naval Hospital at Haslar, and of the different local Societies, especially those of Liverpool, Bristol, &c., and the various continental Museums of Paris, Leyden, Berlin, Vienna, and Frankfort, have been personally examined, and in many cases the specimens contained in those Museums have been sent to the Museum, so that they could be actually compared with specimens in the Museum Collection.

JOHN EDWARD GRAY.

*British Museum,*  
1st December, 1852.



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# CATALOGUE

OF

## M A M M A L I A.

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### Order V. UNGULATA.

Teeth irregular. Cutting and canine teeth often wanting in one or both jaws. Grinders all similar, sometimes even wanting. Toes large, covered with broad hoofs or large conical claws.

Ungulata, *Ray, Syn.* 60, 1693; *Link, Beytr.* 1795; *Gray, Lond. Med. Rep.* xv. 305, *Ann. Phil.* 1825; *Latr. Fam. Nat.* 60, 1825; *Pomet, Rev. Zool.* 1848, 181.

Multungula, Solidungula et Bisulca, *Illiger, Prod.* 94, 101, 103, 1811.

Mam. 2. Bruta, 5. Pecora, and 6. Belluæ, *Linn. Syst. Nat.* ed. 12. i. 26, 1766.

Gravigrades or Onguligrades normaux, *Blainv.* 1816.

Les Edentes, Les Pachydermes, et Les Ruminans, *Cuvier, R. A.* i. 215, 227, 246, 1817; ed. 2. i. 223, 1829.

Edentata et Ungulata, *Latr. Fam. Nat.* 1825.

M. ungulatorum, *Storr. Prod. Mam.* 47, 1780.

Q. Proboscidiæ, Tesserachenæ, Trichænæ, Monochænæ, Hydrophoræ, et Ruminantes, *Gray, Lond. Med. Rep.* xv. 307, 1821.

Belluæ, Pecora, et Bruta, *Selys Longchamps.*

Mam. Stereoplia, Pachydermia, et Anodonea, *Rafin. Anal. Nat.* 54-57, 1815.

These animals have been arranged by various scientific authors in the following manner:—

Ray, in the *Synopsis Methodica Animalium Quadrupedum*, 1693, 60, divides the viviparous, hairy animals or quadrupeds, thus:—

A. UNGULATA. I. *Solidipeda*. Equus, Asinus, Zebra.

II. *Bisulca*. 1. *Ruminantia*. a. Bos, Ovis, Capra. b. Cervus.  
2. *Non-ruminantia*. Sus.

### III. *Quadrисulca*. Rhinoceros, Hippopotamus, &c.

B. UNGUICULATA. 1. *Bifido*. Camelus. 2. *Multifido*.  
a. *Digitis indivisis*. Elephas. 3. *Anomala*. Tatou sive Armadillo, Tamandua, and Ai sive *Ignavus*.

Linnaeus (*Systema Naturæ*, ed. 12, 1766) divides the Hoofed animals into three orders, and arranges the genera thus:—

Order II. BRUTA. 5. Elephas. 7. *Bradypus*. 8. *Myrmecophaga*. 9. *Manis*. 10. *Dasypus*.

Order V. PECORA. 27. Camelus. 28. Moschus. 29. Cervus. 30. Capra. 31. Ovis. 32. Bos.

Order VI. BELLUÆ. 33. Equus. 34. Hippopotamus. 35. Sus. 36. Rhinoceros.

Thomas Pennant, in the *Synopsis of Quadrupeds*, 1771, 8vo, divides these animals thus:—

I. HOOFED QUADRUPEDS. 1. *Whole-hoofed*. Horse. 2. *Cloven-hoofed*. Ox, Sheep, Goat, Giraffe, Antelope, Deer, Musk, Camel, Hog, Rhinoceros, Hippopotame, Tapir, Elephant.

II. DIGITATED QUADRUPEDS. 4. *Without cutting teeth*. Sloth and Armadillo. 5. *Without teeth*. *Manis*, Ant-eater.

Professor Charles Illiger (*Prodromus Systematis Mammalium et Avium*, 1811) arranged the Hoofed quadrupeds as follows:—

Order V. MULTUNGULA. Fam. 16. *Lamnunguia*. 55. *Lipura*. 56. Hyrax. 17. *Proboscidea*. 57. Elephas. 18. *Nasicornia*. 58. Rhinoceros. 19. *Obesa*. 59. Hippopotamus. 20. *Nasuta*. 60. Tapirus. 21. *Setigera*. 61. Sus.

Order VI. SOLIDUNGULA. 22. *Solidungula*. 62. Equus.

Order VII. BISULCA. 23. *Tylopoda*. 63. Camelus. 64. *Auchenia*. 24. *Deveza*. 65. *Camelopardalis*. 25. *Capreoli*. 66. Cervus. 67. Moschus. 26. *Cavicornia*. 68. Antelope. 69. Capra. 70. Bos.

Order VIII. TARDIGRADA. 27. *Tardigrada*. 71. *Bradypus*. 72. *Cholepus*. 73. *Prochilus*.

Order IX. EFFODIENTIA. 28. *Cingulata*. 74. *Tolypeutes*. 75. *Dasypus*. 29. *Vermilingua*. 76. *Orycteropus*. 77. *Myrmecophaga*. 78. *Manis*.

Order X. REPTANTIA. 30. *Reptantia*. 79. *Tachyglossus*. 80. *Ornithorhynchus*. 80 b. *Pamphractus*.

C. S. Rafinesque (in his *Analyse de la Nature*, 12mo, 1815) divides the Hoofed quadrupeds into orders, thus:—

Order IV. STEREOPLIA. 1. *Stereopodia*. Fam. 8. *Solipedia*. Caballus. 2. *Bisulcia*. Fam. 9. *Camelinia*. Camelus, Moschus. Fam. 10. *Ruminalia*. 1. *Stereoceria*. Cervus, Muntjacus, Giraffa. 2. *Cerynxia*. Taurus, Aries, Hircus, Antelope, &c.

Order V. PACHYDERMIA. Fam. 11. *Bellua*. 1. *Rhinoceria*.



Rhinoceros and Unicornus. 2. *Rhineteria*. Elephas, Tapirus, Aper, Tagassus, Babirusa, Pachurus. Fam. 12. *Brutia*. 1. *Hyraxia*. Hippotamus, Hyrax.

Order VI. ANODONEA. 1. *Bradypia*. Fam. 13. *Tardigradia*. Bradypus, Unaus. 14. *Dasypia*. Dasypus, Matus, Oryctopus. 4. *Stomalia*. 15. *Manisia*. 1. Perilepia, Pangolinus, Phataginus. 2. Tamandania, Myrmecophaga, Tamandua. 16. *Monotremia*. Echidna and Ornithorinchus.

Cuvier (*Règ. Animal*, i. 215, 1817) places the Hoofed quadrupeds in three orders, thus:—

Order I. EDENTES. a. *Tardigrades*. 1. Paresseux (Bradypus). 2. Megatherium. b. *Edentes ordinaires*. 3. Tatous. 4. Orycteropes. 5. Fourmiliers. 6. Pangolins. c. *Monotremes*. 7. Echidnes. 8. Ornithorinque.

Order II. PACHYDERMES. a. *Proboscidiens*. 1. Elephants. 2. Mastodontes. b. *Pachydermes ordinaires*. 3. Hippopotames. 4. Cochons. 5. Anoplotherium. 6. Rhinoceros. 7. Damans (Hyrax). 8. Palæotherium. 9. Tapirs. c. *Solidipedes*. Chevaux (Equus).

Order III. RUMINANS. a. *Sans cornes*. 1. Chameux (Camelus). 2. Chevrotains (Moschus). b. *Avec cornes*. 3. Cerfs (Cervus). 4. Girafes. 5. Antelopes. 6. Chèvres (Capra). 7. Montons (Ovis). 8. Bœufs (Bos).

The same arrangement, with rather more detail, is used in the second edition, published in 1829.

Mr. J. E. Gray, in the Natural Arrangement of Vertebrose Animals (*Medical Repository*, 1821, 304), arranged the Ungulated Mammalia into order thus:—

Order VI. TARDIGRADA. 1. *Bradypidae*. Bradypus, Unaus.

Order VII. OLIGODONTÆ. 2. *Dasipidae*. Dasypus. 3. *Orycteropidae*. Orycteropus.

Order VIII. EDENTULÆ. 1. *Manidae*. 1. Myrmecophaga. 2. Tamandua. 3. Cyclopes. 4. Manis.

Order IX. PROBOSCIDIÆ. 1. *Elephantidae*. Elephas.

Order X. TESSERACHENÆ. 1. *Hippopotamidæ*. Hippopotamus. 2. *Suidæ*. Sus, Phacochæres, Dicotyles, Babiroussa.

Order XI. TRICHENA. 1. *Rhinoceridæ*. Rhinoceros, Monoceros. 2. *Hyracidæ*. Hyrax. 3. *Tapiridæ*. Tapirus, Hydrochærus (sumatranus).

Order XII. MONOCHÆNA. 1. *Equidæ*. Equus.

Order XIII. HYDROPHORA. 1. *Camelidæ*.

Order XIV. RUMINANTIA. 1. *Moschidæ*. Moschus, Me mina. 2. *Cervidæ*. Alces, Cervus, Capreolus. 3. *Girafidæ*. Camelopardalis. 4. *Antilopidæ*. Dorcas, Caama, Oryx, Tseeran,

Canna, Nylgau, Catablepas. 5. *Capridæ*. Capra, Ovis. 6. *Bovidæ*. Bos.

Mr. Gray, in the "Outline of the Distribution of Mammalia" (*Annals of Philosophy*, 1825), proposes to divide the Order UNGULATA thus:—

I. Middle toes large, equal. Fam. 1. *Bovidæ*. 2. *Equidæ*.

II. Toes 3, 4, 5, subequal. Fam. 3. *Elephantidæ*. 4. *Dasy-  
pidæ*. 5. *Bradypidæ*.

This arrangement is followed in the List of Mammalia in the Collection of the British Museum, 1843; the List of Osteological Specimens in the British Museum, 1847; the List of Mammalia and Birds of Nepaul, presented by B. H. Hodgson, Esq., to the British Museum; and in this work.

Dr. J. B. Fischer (in the *Synopsis Mammalium*, 8vo, 1828) combines together the Linnæan and Cuvierian arrangement, and arranges the Hoofed Mammalia thus:—

Order VI. BRUTA. a. 102. *Bradypus*. 104. *Dasy-  
pus*. 105. *Orycteropus*. 106. *Myrmecophaga*. 107. *Manis*. b. 108. *Echid-  
na*. 109. *Ornithorhynchus*.

Order VII. BELLUA. 110. *Elephas*. 112. *Tapirus*. 115. *Rhinoceros*. 117. *Hyrax*. 118. *Dicotyles*. 119. *Sus*. 120. *Pha-  
cochærus*. 121. *Hippopotamus*. 126. *Equus*.

Order VIII. PECORA. 127. *Camelus*. 128. *Lama*. 129. *Mos-  
chus*. 130. *Cervus*. 131. *Camelopardalis*. 132. *Antilope*.  
133. *Capra*. 134. *Bos*.

Wagler, in the *Naturl. System Amphibien*, 1830, divides the Hoofed animals thus:—

Order VI. SCROFÆ. 1. *Dicotyles*. 2. *Sus*. 3. *Porcus*.  
4. *Phaco-chærus*. 5. *Rhinochærus*. 6. *Elephas*. 7. *Hippo-  
potamus*. 8. *Rhinoceros*.

Order VII. HYRACES. 1. *Hyrax*.

Order XIII. CAMELI. 1. *Camelus* and *Dromedarius*. 2. *Ca-  
melopardalis*.

Order XIV. PECORA. 1. *Moschus*. 2. *Cervus*. 3. *Bos*.

Order XV. EQUI. 1. *Equus*.

Order XVII. ORYCTEROPODES. 1. *Chlamyphorus*. 2. *Che-  
loniscus*. 3. *Xenurus*. 4. *Euphractus*. 5. *Dasy-  
pus*. 6. *Toly-  
peutes*. 7. *Orycteropus*.

Order XVIII. GLOTTIDES. 1. *Manis*. 2. *Uroleptes*. 3. *Myr-  
mydon*. 4. *Myrmecophaga*.

He forms a new class called GRYPHI, containing

Order I. ORNITHORHYNCHI. Fam. 1. *Glossilepti*. 1. *Tachy-  
glossus*. Fam. 2. *Autarchoglossi*. 1. *Ornithorhynchus*, arranged  
with the fossil *Ichthyosaurus*, *Plesiosaurus* and *Ornitho-  
cephalus*.

Latreille (*Fam. Nat. Reg. Anim.* 596. in 1830) divides the Hoofed quadrupeds (UNGULATA) thus:—

Order IX. PACHYDERMA. Fam. 1. *Pentadactyla*. Elephas. 2. *Tridactyla*. Tapirus, Rhinoceros. 3. *Fissipedes*. Hyrax, Dicotyles, Sus, Hippopotamus. 4. *Solipedes*. Equus.

Order X. PECORA. Fam. 1. *Inermia*. Camelus, Moschus. 2. *Plenicornia*. Cervus and Giraffa. 3. *Tubicornia*. Antilope, Bos, Capra, Ovis.

M. Lesson (*Nouveau Tabl. du Règne Animal*, 1842) arranges the Hoofed quadrupeds in the following orders:—

Suborder III. HETERODONTA. 'Cutting teeth none; teeth sometimes quite wanting.

Suborder IV. EDENTATA. a. Terrestria. Fam. 41. *Dasypodine*. 206. Dasypus. 1. Dasypus. 2. Tatusia. 3. Priodontes. 4. Chlamyphorus. 42. *Myrmecophagine*. 207. Myrmecophaga. 1. Myrmecophaga. 2. Tamandua. 3. Cyclothurus. 43. *Orycteropide*. 208. Orycteropus. 44. *Manisidæ*. 209. Manis. 1. Pangolinus. 2. Phataginus.

Tribe 5. UNGULIGRADA. 1. *Pachydermata*. 1. *Gravigrada*. Fam. 46. *Elephasidæ*. 212. Elephas. 47. *Hippopotamisidæ*. 213. Hippopotamus. 48. *Rhinocerosidæ*. 214. Rhinoceros. 2. *Fissipeda*. 49. *Susidæ*. 215. Tapirus. 216. Phacochoerus. 217. Babirusa. 218. Sus. 219. Dicotyles. 50. *Hyraxine*. 220. Hyrax. 3. *Solidungula*. 52. *Equidæ*. 221. Equus. a. Equus. b. Asinus. 11. *Pecora*. 53. *Camelesidæ*. 222. Lama. 223. Camelus. 54. *Camelopardine*. 224. Camelopardalis. 55. *Cervisidæ*. 225. Cervus. 1. Alces. 2. Rangifer. 3. Dama. 4. Elaphus. 5. Rusa. 6. Axis. 7. Capreolus. 8. Cariacus. 9. Cervequus. 10. Subula. 11. Stylocerus. 56. *Moschesidæ*. 226. Moschus. 1. Moschus. 2. Memina. 3. Napu. 57. *Antilopæ*. 227. Antilope. 1. Antilope. 2. Gazella. 3. Dama. 4. Redunca. 5. Tragulus. 6. Raphicerus. 7. Tetracerus. 8. Cephalophus. 9. Spinigera. 10. Neotragus. 11. Nemorhedus. 12. Rupicapra. 13. Capricornis. 14. Dicranocerus. 15. Pantholops. 16. Anoa. 17. *Ægocerus*. 18. Oryx. 19. Alcelaphus. 20. Tragelaphus. 21. Boselaphus. 22. Orcas. 58. *Ovesidæ*. 228. Kemas. 229. Antilocapra. 230. Capra. 231. Ovis. 232. Ovibos. 59. *Bovesidæ*. 233. Catoblepas. 234. Bibos. 235. Bos. 1. Bison. 2. Bubalus. 3. Taurus.

Order III. ORNITHODEPHIE. 1. *Insectivora*. Fam. 69. *Echidnæ*. 260. Echidna. 2. *Vermivora*. Fam. 70. *Paradoxidæ*. 261. Ornithorhynchus.

Mr. Richard Owen (*Odontography*, 1840–1845) divides the UNGULATA thus:—

I. *Isodactyle*. "Hoofed quadrupeds with toes in even number,

as two or four, and which have a more or less complicated stomach with a moderate-sized simple cæcum, as *Ox*, *Hog*, *Peccary*, and *Hippopotamus*.

II. *Anisodactyle*. "Hoofed quadrupeds with toes (on the hind feet at least) in uneven number, as one, or three, or five, the latter number being manifest in the Proboscidiens. All these have a simple stomach and an enormous cæcum, as *Horse*, *Tapir*, *Rhinoceros*.

III. *Proboscidiens*. "Resembling the preceding in having toes in uneven number, in having a comparatively simple stomach and an enormous cæcum, but combining with a long proboscis so many other peculiarities of structure as to merit the rank of a distinct group of *Ungulata*."

In the *Quarterly Journal of the Geological Society* for 1848, p. 131, with his usual fondness of renaming old groups, Mr. Owen proposes to change the name he has given to the above group to—1. *Artiodactyla*, 2. *Perissodactyla*, and 3. *Proboscidia*. In this paper the recent genera are arranged in the following order:—

I. ARTIODACTYLA. \* *Ruminantia*. 1. *Moschus*. 2. *Antelope*. 3. *Ovis*. 4. *Bos*. 5. *Cervus*. 6. *Camelopardalis*. 7. *Camelus*. \*\* *Non-Ruminantia*. 1. *Hippopotamus*. 9. *Dicotyles*. 10. *Phacochærus*. 11. *Sus*.

II. PERISSODACTYLA. 12. *Tapirus*. 13. *Equus*. 14. *Hyrax*. 15. *Rhinoceros*.

III. PROBOSCIDIA. 16. *Elephas*.

This arrangement is only founded on the consideration of the osteological conformation of the foot, and has the disadvantage of most artificially separating a very natural group recognized by Aristotle, Ray, Linnæus, Illiger, Cuvier, and all recent authors, between two divisions of the order. Cuvier, Fleming, Blainville and others properly used the character here adopted to the whole group for the division of the *Pachydermata* into subdivisions.

Prince Charles Lucien Bonaparte (in his *Prodromus Systematis Mastozoologiæ*, 1847) arranges these animals in four orders, thus:—

Subclass I. EDUCABILIA. Ord. V. BELLUÆ. Fam. 13. *Elephantidæ*. Subfam. 23. *Elephantina*. 24. *Rhinocerotina*. 25. *Hippopotamina*. Fam. 14. *Suidæ*. 26. *Tapirina*. 27. *Suina*. 28. *Anoplotherina*. Fam. 15. *Hyracidæ*. 29. *Hyracina*. Fam. 16. *Equidæ*. 30. *Equina*.

Order VI. PECORA. Fam. 17. *Camelidæ*. 31. *Camelina*. Fam. 18. *Cervidæ*. 32. *Moschina*. 33. *Cervina*. Fam. 19. *Camelopardalidæ*. 34. *Camelopardalina*. Fam. 20. *Bovidæ*. 35. *Antilopina*. 36. *Bovina*.

Subclass II. INEDUCABILIA. Ord. VII. BRUTA. Fam. 21. *Myrmecophagidæ*. 37. Manidina. 38. *Myrmecophagina*. Fam. 22. *Dasypodidæ*. 39. Dasypodina. 40. *Orycteropodina*. Fam. 23. *Bradypodidæ*. 41. Bradypodina.

Series II. OVOVIPARA. Order XII. MONOTREMATA. Fam. 40. *Echidnidæ*. 74. Echidnina. Fam. 41. *Ornithorhynchinidæ*. 75. *Ornithorhynchina*.

Mr. Turner, in his paper on the Skulls of Ungulated Mammalia (*Proc. Zool. Soc.* 1849, 158), adopts Mr. Owen's names for his orders, and arranges the genera as follows:—

I. ARTIODACTYLA. A. *Ruminantia*. 1. *Bovidæ*. Bos, Ovis, Capra, Antelope. 2. *Cervidæ*. Cervus and Camelopardalina. 3. *Moschidæ*. Moschina, Dichobudina. 4. *Camelidæ*. Anoplotheriana and Camelina. B. *Non-Ruminantia*. 5. *Hippopotamidæ*. Hippopotamina, Dicotylinæ. 6. *Suidæ*.

II. PERISSODACTYLA. A. *Typica*. 7. *Rhinocerotidæ*, Equina, Rhinocerina. B. *Aberrantia*. 8. *Elephantidæ*. 9. *Toxodontidæ*. 10. *Manatidæ*.

#### SYNOPSIS OF THE FAMILIES.

I. *Two middle toes large, equal. Bones of the metacarpus and metatarsus united.*

1. **BOVIDÆ.** Two middle toes separate; cutting teeth  $\frac{3}{4}$  or  $\frac{4}{5}$ ; grinders  $\frac{3}{4}$ ; frontal bones generally horned; gullet with two pouches.
2. **EQUIDÆ.** Two middle toes soldered into one; cutting teeth  $\frac{3}{4}$ ; gullet and stomach simple.

II. *Toes 3, 4, 5 to each foot, nearly equal. Teeth nearly in one series.*

3. **ELEPHANTIDÆ.** Grinders rooted, transversely ridged; toes 3·3, 3·4 or 5·5, last joint covered with a hoof; skin thick, nearly naked; hairs large, rigid; gullet simple.
4. **DASYPIDÆ.** Grinders rootless; crown flat, sometimes wanting; face long, acute; body armed with scales or rigid hairs.
5. **BRADYPIDÆ.** Grinders rootless; crown when young conical; face round; limbs elongate; hair dry, crisp; stomach two- or three-celled.

Or the Families may be arranged according to their teeth, thus:—

I. *Teeth well-developed, rooted. Fore-arm constantly prone. Toes hoofed.*

*Bovidae.* Stomach for ruminating; toes 4, middle large.

*Equidae.* Stomach not ruminating; toes 3, middle large.

*Elephantidae.* Stomach not ruminating; toes subequal.

II. *Teeth wanting, or imperfect, rootless. Toes longly clawed.*

*Dasypidae.* Face elongate.

*Bradypididae.* Face short.

### Section 1. FURCIPEDA.

Two middle toes large, equal; bones of the metacarpus and metatarsus united.

Ungulata, Sect. 1, *Gray, Ann. Phil.* 1825.

Isodactyle, part., and Anisodactyle, part., *Owen, Odontography*, 1841.

Artiodactyla, part., and Perissodactyla, part., *Owen, Quart. Journ. Geol. Soc.* 1848, 131; *Turner, Proc. Zool. Soc.* 1849, 158.

*Stereoplia Bisulcia, Rafin. Anal. Nat.* 55. 1815.

*Pecora, Sundevall, Kongl. Vet. Akad. Hand.* 1844; *Pecora*, 1848.

### Fam. 1. BOVIDÆ.

Two middle toes separate. Cutting teeth eight below; upper jaw callous; grinders 6·6 in each jaw. Frontal bones produced, generally bearing horns, especially in the males. Gullet with two long pouches just before the stomach, used for holding and soaking the food before it is chewed. Using their head and horns in defence.

*Ruminantia, Pallas, Zool. Ross. Asiat.* i. 192; *Bronn, Ind. Paleont.* ii. 708.

Q. *Ruminantia et Q. Camelinum, Ray, Syn.* 60. 1693.

*Bovidae, Gray, Ann. Phil.* 1825; *List Mam. B. Mus.* xxvi.; *Storr. Prod. Mam.* 1780; *Lesson in Tab. R. A.* 167; *Fischer, Syn.* 1828.

*Mam. Pecora, Linn. S. N.* ed. 12. i. 90; *Latr. Fam. Nat.* 62. 1825; *Wagler, N. Syst. Amph.* 431. 1830; *Eichwald, Zool. Spec.* iii. 341. 1831.

*Les Ruminans (Ruminantia), Cuvier, Tab. Elem.* 1798; *Dum. Z. A.* 1806; *Cuvier, R. A.* i. 246. 1817, ed. 2. i. 254; *Desm. N. D. H. N.* xxiv. 31, 1804; *F. Cuvier*, 1829; *Dent. Mam.* 227; *Dict. Sci. Nat.* lix. 511.

*Bisulca*, Illiger, *Prod.* 102. 1811.

*Cameli et Pecora*, Wagler, *Amph.* 1831.

*Gravigrades normaux*, Blainv.

*Q. Hydrophoræ et Ruminantes*, Gray, *L. M. Rep.* xv. 307. 1821.

*M. Callodactyles*, Pomet, *Rev. Zool.* 1848, 283.

*Ruminalia* (*Stereoceria et Cerynxia*), Rafin. *Anal. Nat.* 55. 1815.

*Ruminantia et Cœlocerata*, Bronn, *Index Palæont.* ii. 788.

*Cerophorus*, Blainv. *Bull. Soc. Philom.* 1816, 74; Gervais, *Supp.*

*N. Dict. Sci. Nat.* i.

*Pecora unguigrada et digitigrada*, Sundevall, *Pecora*.

*Isodactyla*, part., Owen, *Odontography*, 1845.

*Artiodactyla Ruminantia*, Owen, *Quart. Journ. Geol. Soc.* 1848, 31; Turner, *Proc. Zool. Soc.* 1849.

Desmarest in his *Tableau Méthod. des Mammifères* (*N. Dict. Hist. Nat.* xxiv. 33. 1804) divides the Ruminants (*Pecora*) into the following sections:—

1. Camel and Musk. 2. Stags. 3. Giraffes. 4. Antelopes, Goats, Sheep and Oxen.

M. de Blainville in his *Notes on Ruminants* (*Bull. Soc. Philom.* 1816, 76) divides them thus:—

No horns—1. Chameaux. 2. Cerfs. Including *Cervulus* and *Moschus*.

With horns—3. Giraffe, and 4. *Cerophorus*. Including *Antilope*, *Capra*, *Ovis vel Ammon*, *Ovibos* and *Bos*.

Mr. Gray, in the "Outline of the Distribution of Mammalia" (*Ann. Phil.* 1825), proposed to divide the *Bovidæ* thus:—

I. Horns persistent. 1. *Bovina*. 2. *Camelopardina*.  
II. Horns none or deciduous. 3. *Camelina*. 4. *Moschina*.  
5. *Cervina*.

Colonel Hamilton Smith (*Griffith, A. Kingd.* v. . 1827; *Fischer, Syn.* 609. 1830) proposed to divide them thus:—

I. CAMELIDÆ, containing—1. *Camelus*. 2. *Auchenia*.

II. CERVIDÆ. 1. *Moschus*. 2. *Cervus*.

III. GIRAFFIDÆ. 1. *Camelopardalis*.

IV. CAPRIDÆ. 1. *Antilope*. 2. *Capra*. 3. *Ovis*. 4. *Damalis*.

V. BOVIDÆ. 1. *Catoblepas*. 2. *Ovibos*. 3. *Bos*.

Mr. Ogilby, in a paper on the genera of *Ruminantia* (*Proc. Zool. Soc.* 1836, 133), proposed to divide them thus:—

I. CAMELIDÆ. 1. *Camelus*. 2. *Auchenia*.

II. CERVIDÆ. 1. *Camelopardalis*. 2. *Tarandus*. 3. *Alces*.  
4. *Cervus*, *Capræa* (*Capreolus*), *Prox* (*Muntjac*).

III. MOSCHIDÆ. 1. *Moschus*. 2. *Ixalus*. 3. *Hinnulus* and *Capreolus*.

IV. CAPRIDÆ. (*Muffie none, browsers.*) 1. *Mazama*. 2. *Ma-*

doqua. 3. Antilope. 4. Gazella. 5. Ovis. 6. Capra. 7. Ovibos.

V. BOVIDÆ. (Muffle naked, grazers.) 1. *Tragulus* (Ant. pygmeus). 2. *Sylvicapra* (A. Mergens). 3. *Tragelaphus* (A. picta). 4. *Calliope* (A. *Strepsiceros*). 5. *Kemas* (A. Goral). 6. *Capricornis* (A. Thar). 7. *Bubalus* (A. *Bubalus*). 8. *Oryx* (A. *Oryx*). 9. *Bos*.

Lesson (*Nov. Tab. Reg. Anim.* 167. 1842) divides them into—

1. *Camelisiidæ*. 2. *Camelopardinae*. 3. *Cervisiidæ*. 4. *Moschisiidæ*. 5. *Antilopeæ*. 6. *Ovesiidæ*. 7. *Bovesiidæ*.

Mr. Hodgson, in an Essay on various genera of Ruminants (*Journ. Acad. N. S. Calcut.* 1847; *Mission Press*, 1847), proposes to divide them into—1. *Cervidæ* or Haranadi; 2. *Moschidæ* or Mushkadi; 3. the *Cavicorniæ minores* or Flocks, as *Antilopidæ* or Sasinadi; 4. *Cavicorniæ majores* or Herds, as *Bovidæ* or Gaudrisha.

Professor Carl Sundevall in his Essay on *Pecora* (*Kongl. Vetensk. Akad. Handl.* 1844, 1846; and *Hornschuch, Archiv*, ii. 1848) proposes the following arrangement:—

A. UNGULIGRADA. a. *Cervicornia*. I. *Camelopardalina*. 1. *Camelopardalis*. II. *Cervina*. 2. *Alces*. 3. *Rangifer*. 4. *Cervus*. 5. *Capreolus*. 6. *Prox.* 7. *Moschus*. 8. *Tragulus*. b. *Bovicornia*. III. *Sylvicaprina*. a. 9. *Tetraceras*. 10. *Tragelaphus*. 11. *Sylvicapra*. 12. *Neotragus*. 13. *Nanotragus*. 14. *Callo-tragus*. b. 15. *Cervicapra*. 16. *Strepsiceros*. 17. *Hippotragus*. IV. *Bovina*. a. 18. *Portax*. 19. *Damalis*. 20. *Anoa*. 21. *Bos*. b. 22. *Ovibos*. 23. *Catoblepas*. 24. *Oryx*. V. *Antilopina*. 25. *Bubalis*. 26. *Antilope*. 27. *Dicranoceras*. VI. *Caprina*. 28. *Ovis*. 29. *Capra*. 29 b. *Rupicapra*. 29 c. *Hemitragus*. 30. *Nemorhedus*. 31. *Oreotragus*.

B. DIGITIGRADA. VI. *Camelina*. 32. *Camelus*. 33. *Auchenia*.

M. Pucheran (*Compt. Rendus Acad. Scien.* 1849, 775) divides the Ruminantes into three families:—1. Les Camelides. 2. Les Tragulides (*Moschus*). 3. Les Cervides. The latter is divided into two tribes:—1. Les Cerviens. 2. Les Boviens.

M. F. Cuvier observes:—"Mais tous ces essais ne sont point encore de nature à satisfaire la méthode naturelle, et les naturalistes doivent encore chercher à découvrir quelles sont les parties qui, chez ces animaux, sont propres à caractériser les genres."—*Dict. Sci. Nat.* lix. 514. 1829.

Mr. Ogilby remarks (*Proc. Zool. Soc.* 1836, 133):—"The presence or absence of horns in one or both sexes; the substance and nature of these organs, whether solid or concave, permanent



or deciduous; the form of the upper lip, whether thin and attenuated as in the *Goat*, or terminating in a broad heavy naked muzzle as in the *Ox*, and the existence of lachrymal sinuses and interdigital pores, are the characters which really influence the habits and oeconomy of Ruminating animals, and upon which their generic distinction mainly depends."

He continues :—"That the presence or absence of horns in the female regulates in a great measure the social intercourse of the sexes; that upon the form of the lips and muzzle, the only organs of touch and prehension among the *Ruminantia*, depends the nature of the food and habitat, making the animal a *grazer* or a *browser*, as the case may be; and that the existence or non-existence of the interdigital glands, the uses of which appear to be to lubricate the hoofs, has a very extensive influence upon the geographical distribution of the species, confining them to the rich savannah and moist forest, or enabling them to roam over the arid mountain, the parched karroo, and the burning desert."

Mr. H. N. Turner observes :—"It is certainly remarkable, that while the teeth have contributed so important a share in the characters by which the Mammalia have been arranged by various authors, they should have been so entirely overlooked in the members of the present division; for notwithstanding the great uniformity and strongly-marked character pervading the Ruminant dentition, very decided characters may frequently be found in the form and direction of the incisors, and in the presence or absence of the supplemental lobe in the molars; and it is the more to be wondered at when we consider that the incisors, from their position, may often easily be seen in dried specimens, and that the character alluded to in the molars has been found of considerable value in the interpretation of fossil remains."—*Proc. Zool. Soc.* 1849.

#### SYNOPSIS OF THE TRIBES.

- I. *Horns permanent, covered with a permanent horny coat or hairy skin. Cutting teeth only in lower jaw.*
  1. BOVINA. Horns covered with horny sheaths.
  2. GIRAFFINA. Horns covered with a hairy skin, with a tuft of hair at the tip.
- II. *Horns deciduous, covered when young with a deciduous hairy skin, or entirely wanting.*
  3. CERVINA. Cutting teeth none above. Horns deciduous. Back of tarsus hairy.

4. **MOSCHINA.** Cutting teeth none above. Horns none. Back of tarsus bald.
5. **CAMELINA.** Cutting teeth 8 above and below. Horns none. Hoofs small, compressed.

Subfamily I. Horns permanent, covered with a permanent horny coat or hairy skin. Cutting teeth only in lower jaw; front edge of upper jaw callous. Hoofs triangular.

### Tribe 1. BOVINA.

Horns expanded from a smooth horny rudiment into a permanent horny sheath to the conical process of the frontal bone.

*Bos*, Linn. S. N.

*Capra*, Ovis et *Bos*, Linn. S. N.

Bovidae, *Selys Longchamps*, 1842.

Bovina, Gray, *Ann. Phil.* 1825; *List Mam. B. M.* xxvi.

Q. Bovinum, Q. Ovinum, et Q. Caprinum, Ray, *Syn.* 60, 1693.

Cavicornia, Illiger, *Prod.* 106, 184.

Tubicornia, Latr. *Fam. Nat.* 1825.

Capridæ et Bovidæ, H. Smith, Griffith, A. K. iv. 182.

Antilopidæ, Capridæ et Bovidæ, Gray, *Lond. Med. Rep.* xv. 308, 1821.

Les Kinoceres ou Ruminants à cornes osseuses (*Bos*, &c.), Duvernoy, *Tab. Anim. Vert.*

Les Ruminans à cornes osseuses, F. Cuv. 1829.

Antilopiens, Pomet, l. c. 184.

Ruminalia Cerynxia, Rafn. *Anal. Nat.* 56, 1815.

Pecora Unguligrada Bovicornia, Sundevall, *Pecora*, 64.

Fam. Sylvicaprina, Bovina, Antilopina et Caprina, Sundevall, *Pecora*, 64.

Mr. Gray, in his paper "On the Arrangement of the Hollow-horned Ruminants (*Bovidæ*)" (*Annals & Mag. Nat. Hist.* 1849, xviii. 229), observes, "The systematic arrangement of these animals has been one of the most difficult subjects for the student of mammalia.

"Linnæus (*Syst. Nat.* i. 27), in his last edition of the *Systema Naturæ*, divides them into three genera according to the direction of the horn, which he describes as erect in *Capra*, reclinate in *Ovis*, and porrect in *Bos*, and separates these from *Cervus* because they have tubular, while that genus has solid branched and deciduous horns.

"Gmelin in his edition adds to these the genus *Antilope*, which had been established by Pallas, and characterizes that genus as having solid horns like the *Cervi*, but simple and persistent. Now I need scarcely observe that these characters will not define

the genera, for all *Goats* have not erect horns, if any have, and it is the same with the other genera; and we all know that the Antelopes have tubular horns, in the sense that word is used by Linnæus, as much as the Oxen, Sheep and Goats; but this error of Gmelin has had its influence up to this time, for the horns of Antelopes in Cuvier's first and last edition of *Le Règne Animal* are described as having 'the nucleus of the horn solid, and without pores or sinuses, like the horns of the Stags.'

"M. Geoffroy, perceiving that the characters furnished by Linnæus were not sufficient to separate the Antelopes from the other genera, examined the structure of the prominences of the frontal bones which form the core or support of the horns of the Antelopes, and he describes the core of the horns of the Antelopes to be solid and without sinuses, while he characterizes the cores of the horns of the Goats, Sheep and Oxen as in great part occupied with cells which communicate with the frontal sinus, and Cuvier, Latreille and most authors have without re-examination adopted these characters.

"Some years ago I examined the cores of the horns of many species of Antelopes for Colonel H. Smith, and found they were all more or less cellular within, and these cells had a communication with the frontal sinus; certainly the cells are not so numerous as in the thick horns of some Oxen, but they are quite as numerous for the thickness of the core; but it is to be remembered that the general character of the horns of Antelopes is to be slender and elongated, and consequently there is not so much room for cells, as their presence would destroy the strength of the core, so as not to form a fit support for the horns; and thus this character is merely reduced to one dependent on the small size or slenderness of the horns, which, though usual, is not universal in the genus, for example in the *A. Oreas* and others.

"Colonel Smith, aware of this difficulty, divided these animals into two families: *Capridæ*, characterized by having the horns 'vaginating upon an osseous nucleus totally or nearly solid,' containing the genera *Antilope*, *Capra*, *Ovis*, and a new genus which he called *Damalis* for the Antelopes with high withers; and second, the family *Bovidæ*, with horns 'vaginating upon a bony nucleus not solid, but more or less porous and cellular,' including the genera *Catoblepas* or *Gnu*, *Oribos* or *Musk Ox*, and *Bos*\*.

"This arrangement shows that much reliance is certainly not to be placed on M. Geoffroy's character for the genus *Antilope*,

\* I may remark that Cuvier says that the genus *Bos* has a large naked muffle, yet two species which he refers to it have a hairy muzzle like the Sheep, viz. *B. moschatus*.

for here the Goat and Sheep are said to have the same peculiarity as he gives to separate the Antelopes from them.

"Several authors after this period considered the subgenera proposed by De Blainville and Colonel H. Smith as genera, and grouped them into families.

"Mr. Ogilby, in a theoretical arrangement of Ruminants, published in the *Proceedings of the Zoological Society* for 1836, divides these animals into two families, characterized thus: *Capridæ*, 'muffle none;' *Bovidæ*, 'muffle distinct, naked.' Of this arrangement I need only remark, that he places *Ovibos* in *Capridæ* and *Bos* in *Bovidæ*, *Kemas* or the Jemla Goat in *Bovidæ*, and *Capra* in *Capridæ*, thus separating into distinct families most nearly allied species; while the genus *Ixalus*, which is a sheep or antelope with rudimentary horns, is referred to the family *Moschidæ*, and the *Gnu* is entirely overlooked. I am satisfied, if Mr. Ogilby had attempted to arrange a collection by this system, he must have soon abandoned it.

"Within the last few years Professor Sundevall of Stockholm has proposed to arrange these animals according to the form of their hoofs, and he has regarded the subgenera of preceding authors as genera, and divided them into four families, thus: 1. *Caprina*, containing *Ovis*, *Capra*, *Nemorhedus* and *Oreotragus*. 2. *Antilopina*: *Antelope*, *Dicranoceras* and *Bubalus*. 3. *Bovina*: *Oryx*, *Catoblepas*, *Ovibos*, *Bos*, *Anoa*, *Portax*, *Damalis*. 4. *Sylvicaprina*: *Hippotragus*, *Strepsiceros*, *Cervicapra*, *Calotragus*, *Nanotragus*, *Neotragus*, *Sylvicapra*, *Tragelaphus* and *Tetracerus*. In this arrangement he appears to have overlooked the fact, that the hoofs of these animals are modified according to the kind of country which the animal is destined to inhabit, and therefore this arrangement is dependent on that single circumstance, and not on the considerations of all the peculiarities of the species; hence the species which inhabit rocky pinnacles, as the Thar and Ghoral (*Nemorhedus*) and Klipspringer (*Oreotragus*), are separated from the other Antelopes and placed with the Goats, and the large and heavy Antelopes which inhabit the plains, as the *Oryx*, *Portax* and *Damalis*, are placed with the Oxen.

"If this system is fully carried out, the *Rein Deer* should be separated from its allies and placed with the *Musk Ox*; and I am not certain that the *Addax* Antelope should not be arranged in the same group, for it has the same shaped hoofs, the sands of the Desert probably requiring the same structure for progression as the snow.

"After examining all these arrangements, and after repeated examinations of the animals, I believe that the form of the horns affords the most natural character for subdividing them into groups; and I think that if the Antelopes are divided into two

groups, which appear to me natural, then there is no difficulty in finding neat characters for the definitions of the families."

#### SYNOPSIS OF THE SUBTRIBES.

I. The horns round or compressed, without any raised keel on the inner front angle.

1. The horns smoothish, spread out on the sides, cylindrical or depressed at the base, the knee (or wrist) below the middle of the fore-leg—*Bovæ*.

2. The horns conical, bent back, cylindrical or compressed, and ringed at the base, the knee (or wrist) in the middle of the fore-leg—*Antilopæ*.

II. The horns subangular with a more or less distinct ridge on the front angle, the knee in the middle of the fore-leg.

3. The horns subspiral, erect; crumen distinct; forehead flat; male not bearded.—*Strepsicereæ*.

4. The horns recurved, compressed; crumen none; forehead concave; male bearded—*Capræ*.

5. The horns spiral, bent out on the sides; crumen none; forehead convex; male not bearded—*Ovæ*.

The position of the knee is the external mark of the shortness of the cannon bone, compared with the length of the *ulna* or fore-arm bone.

Section 1. The horns round or compressed, without any raised keel on the inner front angle—*Levicornia*.

Gray, *Ann. & Mag. N. H.* 1847, 230.

Subtribe I. *Bovæ*. The horns smoothish, spread out on the sides, cylindrical or depressed at the base; situated on the frontal ridge and bent laterally outward, and recurved at the tip. The nose is broad, with the nostrils on the side. The skull has no suborbital pit or fissure; the cutting-teeth are nearly equal-sized, and slightly shelving outwards. The knee (or wrist) below the middle of the fore-leg, the cannon bone being shorter than the fore-arm bone.

*Bovæ*, Gray, *Ann. & Mag. N. H.* 1847, 230; *Gleanings Knowsley Menag.*

*Bos*, Linn. *S. N.* i.; Gmelin, *S. N.* i. 202; Illiger, *Prod.* 107; Cuv. *R. A.* i. 278; Blainv. *B. S. Philom.* 1816, 76; Turner, *Proc. Zool. Soc.* 1849.

*Bovidæ*, part., Ogilby, *P. Z. S.* 1836, 138; Hodgson, *J. A. S. Beng.* 1847.

*Bovina* and *Antilopina*, part., Sundevall, *Pecora*.  
*Taurus*, Rafinesque, *Anal. Nat.* 56, 1815.

Colonel Hamilton Smith divides the *Bovæ* into three tribes, thus : 1. *Bubalus*. 2. *Bison*. 3. *Taurus*.—*Griffith, A. K.* v. 1827; *Fischer, Syn.* ii. 651.

Professor Sundevall arranges the genera of this subtribe thus : A. 1. *Anoa*. 2. *Bos*. Subdivided thus :  $\alpha$ . *Bos*.  $\beta$ . *Poephagus* and *Bubalus*.  $\gamma$ . *Bison*. B. 3. *Ovibos*.—*Kongl. Vet. Akad. Handl.* 1846, and in *Hornschuch Arch.* 1848.

Mr. Hodgson, in his 'Illustrations of the genera of *Bovidæ*,' divides the species into the genera—1. *Bos* (*domesticus*). 2. *Bibos* (*cavifrons* and *gaveus*). 3. *Bison* or *Bisonius* (*Americanus* and *poephagus*). 4. *Bubalus* (*Arna*)—from the character of the skull and other parts of the skeleton. See *Journ. Asiat. Soc. Beng.* x. 449, 1847.

Mr. Gray, in the *Annals and Mag. Nat. Hist.* 1846, 229, observes, "The *Bovæ* consist of the genera *Bos*, *Bibos*, *Bison*, *Bubalus* and *Anoa*, with a naked moist muffle, and *Poephagus* and *Ovibos* with a hairy ovine muzzle.

"These genera are well distinguished by the form of the intermaxillaries. In *Poephagus* (*grunniens*), *Bibos* (*frontatus* and *Gour*), and in *Bison* (*Urus*), they are short, triangular, acute behind, and not reaching to the nasal, being gradually shorter in proportion from *Poephagus* to *Bison*. In *Bos* (*Taurus*) and *Bubalus* (*Buffelus* and *Caffer*) they are elongate, reaching to the suture between the nasal and cheek-bone, and extending furthest up in *B. Buffelus*."

A. Muffle broad, moist at the end of the nose. Hair short, rigid, adpressed, or short, crisp and woolly. The gripper with a well-developed supplementary lobe. The bony part of the tail produced, elongated, reaching to the hocks. Living on the plains of warm or temperate regions.

The Oxen of the Plains, Gray, *Knowsley Menag.* 1849; *Ann. & Mag. N. H.* 1848, 229.

a. True Oxen. Bodies covered with rather stiff hair. Shoulder proportionate to the haunches; the cannon bone of the hind- and fore-legs of equal length.

True Oxen, Gray, *Knowsley Menag.* 1849.

\* Intermaxillaries elongate, and produced behind and between the nasal and cheek bones; the upper lip bald, callous and moist, as wide as the outer edge of the nostrils.

### 1. *Bos*.

Horns cylindrical, conical, nearly circular at the base, curved upwards and outwards, far apart at the base, on the sides of the

upper part of the ridge at the hinder end of the occipital plane. The facial and frontal portion of the skull equal. Dorsal ridge distinct, sometimes produced into a dorsal hump.

Bos, sp., *Linn.*; *Desm.* 1804; *Turner, Proc. Zool. Soc.* 1849.  
 Taurus, *Storr. Prod. Mam.* 17; *H. Smith, Griffith A. K.* v. 182.  
 Bos (and Boves), *Sundevall, Pecora*, 75.  
 Bos, *Gray, Knowsley Menag.* 1849.

# 1. BOS TAURUS. The BULL.

Forehead flat; withers not humped.

Bos Taurus, *Plin. Hist. Nat.* viii. c. 45, 46; *Gesner, Quad.* 24-103, fig.; *Aldrov. Bisulc.* 13. fig. p. 36; *Jonston, Quad.* t. 15.  
 Taurus castratus, *Jonston, Quad.* t. 15.

Vacca, *Gesner, Quad.* 25. fig.

Vitutus, *Jonston, Quad.* t. 15.

Bos domesticus, *Jonst. Quad.* 36. t. 14; *Linn. Mus. Adolph. Frid.* i. 12; *Brisson, Reg. An.* 78.

Bos Taurus, *Linn. Fn. Suec.* 15; *Syst. Nat.* i. 98; *Gmelin, S. N.* i. 202; *Cuvier in Dict. Sci. Nat.* v. 19; *Desm. Nov. Dict. H. N.* iii. 536; *Mamm.* 499; *Desmoul. Dict. Class. H. N.* ii. 370; *Fischer, Syn. Mam.* 499; *Gray, List Mam. Brit. Mus.* 151; *List Osteol. sp. B. M.* 53; *List of Mr. Hodgson's Collection*, 24.

Bos (Taurus) taurus, *Lesson, Nov. Tab. R. A.* 185.

Bull, *Penn. Syn.* 4.

Ox, *Penn. Brit. Zool.* 7.

Common Ox, *Shaw, Zool.* ii. 2. 397. t. 208.

Stier and Ochs, *Meyer, Thiere*, t. 41, 42; *Schrank, Fn. Boic.* i. 47.

Bœuf, *Buffon, H. N.* iv. 437. t. 14.

Oxe, *Koe, Pontopp. Dan.* i. 597.

*Hab.* Europe. Always in a domesticated state.

## 1. White Scotch Bull, *Gray, Cat. Mam. B. M.* 151.

Bisontes jubati, *Boethius, Reg. Scot.*; *Gesner, App.* 4, fig. imag.

White Urus (Urus Scoticus), *H. Smith, Griff. A. K.* iv. 417.

Bos Urus Scoticus, *Wagner, Schreb. S.* 1568.

Chillingham Bull, *Gray, Ann. N. H.* ii. 284; *Knight, Mus. Animated Nature*, f. 695, 696.

Bos Scoticus, *Swainson.*

Bos Taurus Scoticus, *H. Smith in Griffith A. K.* v. 376; *Fischer, Mam.* 654.

Wild or White Forest Cow and Bull, *Low, Dom. Anim. B. I.* t. 1 ♀, & *Supp.* t. 1 ♂.

Wild Cattle, Bull and Cow, *Bewick, Hist. Quad.* 38. fig.

*Hab.* Scotland.

a. Bull. Chillingham Park. Presented by the Earl of Tankerville.

2. The Pembroke Bull and Cow, *Low, Dom. Anim. B. I. t. 2.*
3. The West Highland Bull, Heifer and Cow, *Low, Dom. Anim. B. I. t. 3, 4.*
4. West Highland Ox, *Stephens, Book of the Farm, 1274. fig.*  
Kylloe Ox, *Bewick, Hist. Quad. 36. fig.*
5. The Zetland Cow, *Low, Dom. Anim. B. I. t. 5.*
6. The Kerry Cow, *Low, Dom. Anim. B. I. t. 6.*
7. The Polled Angus Bull, *Low, Dom. Anim. B. I. t. 7.*
8. Alderney Cow and Calf, *Low, Dom. Anim. B. I. t. 14.*
9. Fifeshire Cow, *Low, Dom. Anim. B. I. t. 15.*
10. Sheeted Somersetshire Cow (horned and polled), *Low, Dom. Anim. B. I. t. 16.*
11. Herefordshire Cow and Bull, *Low, Dom. Anim. B. I. t. 17; t. 2, Supp.*  
Hereford Ox, *Stephens, Book of the Farm, 1274. fig.*
12. Long-horned or Lancashire Bull and Ox, *Bewick, Hist. Quad. 33. fig. 35. fig.*  
Long-horned Bull, *Low, Dom. Anim. B. I. t. 18; Stephens, Book of the Farm, 1273. fig.*
13. The Teeswater Short-horned Bull and Cow, *Low, Dom. Anim. B. I. t. 19, 20.*  
English Short-horn Cattle, *Knight, Mus. Anim. Nat. f. 701.*  
Short-horn Ox, Bull and Cows, *Stephens, Book of the Farm, 1270. figs. t. 32.*
14. The Galloway Heifer and Bull, *Low, Dom. Anim. B. I. t. 8.*
15. The Polled Suffolk Cow, *Low, Dom. Anim. B. I. t. 9.*
16. The Devon Bull, *Low, Dom. Anim. B. I. t. 10.*
17. The Sussex Oxen, *Low, Dom. Anim. B. I. t. 11.*
18. The Glamorgan Cow, *Low, Dom. Anim. B. I. t. 12.*
19. The Ayrshire Cow, *Low, Dom. Anim. B. I. t. 13.*
20. The Yorkshire Cow, *Knight, Mus. Anim. Nat. f. 698.*
21. Holstein or Dutch Bull and Cow, *Bewick, Hist. Quad. 29. fig.*  
Improved Holstein or Dutch Bull and Cow, *Bewick, Hist. Quad. 30. fig.*  
*Bos Taurus frisius, Wagner, Schreb. Saugth. 1569, t. 297 B.*
22. French Cattle.—*Desmarest, Mammalia, 499*, described the various breeds of French domestic cattle, but he does not refer to any figures of them.



23. Polish Bull, *Gray, List Mam. B. M.* 151 ; *Knowsley Menag.*  
*Bos Taurus Podolicus, Wagner, Schreb. Saugth.* 1569, t. 297 A.  
*Hab.* Poland.  
      $\alpha$ . Bull. Poland. From the Vienna Market.
24. Hungarian Bull, *Gray, List Mam. B. M.* 151 ; *Knowsley Men.*  
*Wild Cattle of Marema, Knight, Mus. A. Nat. f.* 703, 704.  
*Bos Taurus Hungaricus, Desm. Mam.* 499.  
*Ungarischer vieh, Beckberlin, Abbild. der Rindv.* 15. t. 25, 26.  
*Hab.* Hungary.  
     Bull. Hungary. From the Vienna Market.
25. South African Long-horned Cattle, *Knight, M. A. N. f.* 710.  
*Hab.* Cape of Good Hope.  
     Pair of horns. Cape of Good Hope.  
     Two separate horns, very large, used as a powder-flask.  
     Cape of Good Hope.
- 25\*. Swiss Cattle. *Bos Taurus hyselurus, Wagner, Schreb.*  
*Saugth.* 1570, t. 297 c.  
     Freiburg Cattle, *Witte, Rindv. Rassen*, ii. t.       ; *Beck-*  
     *berlin, Abbild.* ii. ; *Pabst, Anleit.* 42. t. 3.
- 25\*\*. Alpine Cattle.  
     Halsi Cattle, *Witte, Rindv. Rassen*, iii. t.  
     Schwyz. Rindv., *Michel & Ithens, Manathsch.* 59. t. 1, 2.  
     Gebirgsvieh, *Beckberlin, Abbild.* 9. t.       ; *Pabst, Anleit.* 42.  
     *Bos Taurus alpestris, Wagner, Schreb. Saugth.* 1570,  
     t. 297 d.
26. Syrian Ox, *Knight, Mus. A. Nat. f.* 726, 728.
27. Moldavian Cattle, *Knight, Mus. A. Nat. f.* 709.
28. Italian Campagna Bull, *Knight, Mus. A. Nat. f.* 705.  
     Bœuf de la Romagne, *Cuvier, Oss. Foss.* iv. 109.
29. Spanish Bulls, *Knight, Mus. A. Nat. f.* 706-708.
30. Egyptian Cattle, *Long, Egyptian Antiquities in Brit. Mus.*  
     ii. 57. fig. 169, lower animals.
31. *Bos Madagascariensis niveus, Donnd. Zool. Beytr.* 693.
32. *Bos Tinianensis niveus, Donnd. Zool. Beytr.* 693.  
     Rindvieh de Insel Tinian, *Zimm. Geog. Zool.* ii. 83 ; *Anson,*  
     *Voy.* 285.  
     *Bos Taurus Tinianensis, Gmelin, S. N.* i. 202 ; *Fischer, Syn.*  
     *M.* 500.
33. Lant, Lampt oder Dant, *Dapper, Africke*, 24 ; *Leon, Afrikan.*  
     751 ; *Eberl. Naturlehre*, i. 287.  
     *Bos humilis, Frisch. Natursys.* i. n. 5.  
     *Bos Africanus niveus celer, Donnd. Zool. Beytr.* 693.

34. Der Wilde Ochse von Gebirge Nerever, *Donnd. Beytr. Zool.* 704; *Zimm. Geog. Zool.* ii. 93; *Thevenot, Voy.* iii. 113.
35. Die braunen Wilden Ochsen von Duguela, *Donnd. Beytr. Zool.* 705; *Zimm. Geog. Zool.* ii. 93; *Marmol. Afrique*, iii. 66-157.
36. Galla Ox, *Salt, Travels.*  
 The Beuraye or Beurie.  
 ? Bos Cafer, *Des Mur. & Flor. Prevost, Voy. en Abyss.* vi. 40.  
 Bos abessinicus, *Donnd. Zool. Beytr.* 693, 1792; *Zimmer. Geog. Zool.* i. 157, ii. 94; *Dapper, Afrik. Ins.* 31; *Lobo, Voy. Abess.* 70, 1728.  
 Bos Taurus Abyssynicus, *Gmelin, S. N.* 294; *Fischer, Syn. Mam.* 500.  
*Hab.* Abyssinia.  
 Pair of very thick, light horns. Central Africa. Presented by Captain Clapperton, R.N., and Major Denham. Figured in *Griffith, A. K.* iv. t. 201. f. 4.
37. Cattle of Peauhy, *Gardiner, Trav. Brazils*, 278. Horns very long, wide-spreading; colour brown.  
*Hab.* North Brazil.
38. Cattle of Brazils, *Gardiner, Trav. Brazils*, 167, 173. Used to carry loads on their back.  
*Hab.* N. Brazils.
39. Cattle of Chili, *Darwin, Journal*, 130, 145.  
*Hab.* Chili and South America generally.
40. Nata or Niata, *Darwin, Journal*, 145, 146. With a pug-nose like a pug or bull dog.  
*Hab.* Buenos Ayres. Skull in Mus. Coll. Surg.
41. Falkland Island Wild Cattle, *Darwin, Journal*, 190, 192. Three varieties:—1. dark brown; 2. white with black head and feet; 3. mouse colour.  
*Hab.* Falkland Islands. Introduced from France 1764.

#### OSTEOLOGY.

- Taureau, *Daubenton, Buff. H. N.* iv. t. 23.  
 Bœuf sans cornes, *Cuvier, Oss. Foss.* iv. t. 9. f. 3, 4.  
 Bœuf de la Romagne à grandes cornes, *Cuvier, Oss. Foss.* iv. t. 9. f. 7, 8.  
 Petit bœuf d'Ecosse à cornes descendantes, *Cuvier, Oss. Foss.* iv. t. 9. f. 9, 10.  
 Bull, *Stephens, Book of the Farm*, 1286. f. 598.  
 Skeleton. England.  
 Skull. England.

2. *Bos INDICUS*. The ZEBU.

Forehead convex; withers with a more or less large fleshy hump; dewlap deep, waved; the upper part of the rump shelving very much.

*Bos Scythicus gibbosus*, *Charlet. Exerc.* 8.

*Bos Indicus*, *Linn. S. N.* 99; *Erxleb. Syst.* 240.

*Bos domesticus*, *Hodgson, Journ. A. S. B.* 1841, x. 907; *Calcutta Journ. N. H.* iv. 289.

*Bos Taurus indicus*, *Fischer, Syn.* 499; *Hodgson, Proc. Z. Soc.* 1834, 99; *Gray, Cat. Hodgson Coll. B. M.* 24.

*Bos Zebu*, *J. Brookes, Cat. Mus.* 65, 1825.

*Bos pusio*, *Swains. Hist. Quad.* 283. f. 113.

*Bos Taurus Zebu*, *Wagner, Schreb.* 1570, t. 298, 298 A.

*Bos Taurus* var., *Gray, List Mam. B. M.* 151; *Cat. Osteol. Sp. B. M.* 53; *Cat. Hodgson Coll.* 24.

Domesticated Cows, *Hodgson, J. A. S. Beng.* i. 348, 382.

*Hab.* India. Always in a domestic state.

1. Little Indian Buffalo, *Edw. Birds*, vi. t. 200.

Indian Bull, *Penn. Syn.* 6. t. 1. f. 2.

Zebu, *Buffon, H. N.* xi. 439. t. 42; *Bewick, Hist. Quad.* 44. fig.

*Bos Indicus*, *Linn. S. N.* i. 99.

Male and female. Grey. India. Presented by Lady Whitshed.

2. Great Indian Ox, *Pennant, Quad.* t. 16. f. 2, lower figure.

*Bos Taurus indicus*, a. major, *Fischer, Syn.* 499.

Zebu grande race, *Desm. Mam.* 499.

Indian Ox, *Bos Taurus indicus*, *Bennett, Gard. Zool. Soc.* i. 65. fig.

A Guzzarah Bullock, *Hardw. Icon. ined. Brit. Mus.* n. 10,975. t. 180, 199.

Gun Bullock, *Hardw. Icon. ined. Brit. Mus.* n. 10,975. t. 183, 185, 186, 187, head, t. 188, skull.

The head and horns of a larger Zebu. India. Presented by Jacob Bell, Esq.

3. *Bos Taurus indicus*, *Cuvier, Menag. Mus.* t. ♀, grey.

*Bos taurus indicus minor*, *Fischer, Syn.* 499.

Petit Zebu, *Desm. Mam.* 499.

A Shaurr or Sacred Bull, *Hardw. Icon. ined. Brit. Mus.* n. 10,975. t. 179.

Horns project forwards, and form a considerable angle with the forehead.

4. Zebus, *Knight, M. A. N.* f. 730-733.

Horns placed nearly on the same line as the forehead; prepuce large, often visible in the females.

5. Madras Ox, *Buchanan, Mysore*, ii. 8. t. 13. f. 34.
6. Madhu Givi Oxen, *Buchan. l. c.* ii. 8. t. 13. f. 35, t. 14. f. 36, 37.
7. Seringapatam Oxen, *Buchan. l. c.* ii. 8. t. 15. f. 38, 39.  
*Hab.* India, Mysore.
8. Two-humped Zebu.  
Zebu à deux bosses, *Desm. Mam.* 499.  
*Bos Indicus ditophus*, *Fischer, Syn.* 499.  
Hornless Zebu, Zebu sans cornes, *Cuvier, Menag. Mus.* t.  
*Hab.* India.
9. Bucharian Ox.  
Rindviech, *Pallas, N. Nord. Beytr.* iv. t. 3.  
*Hab.* Bucharina, from Arabia.
10. Nepal Ox, *Hodgson; Gray, Cat. Hodgson Coll. B. M.* 24.
11. A Javanese Cow, *Hardw. Icon. ined. Brit. Mus.* n. 10,974.  
t. 103.

## OSTEOLOGY.

Zebu à cornes, *Cuvier, Oss. Foss.* iv. 109. t. 9. f. 5, 6.

Gun Bullock, *Hardw. Icon. ined. B. M.* 10,975. t. 188.

Skull, young (lower jaw wanting).

Two skulls of domesticated cattle of Nepal, male and female.

Presented by B. H. Hodgson, Esq.

Bones of body. Nepal. Presented by H. Hodgson, Esq.

## 3. BOS DANTE. The DANTE.

Face rather narrow; forehead very flat, with the horns on the side of the high occipital ridge; withers with a small but distinct hump.

*Bos elegans et parvus africanus*, *Bellon. Obs.* 119. fig.

*Juvenca sylvestris*, *Alpin. Æg.* i. 233. t. 14. f. 2.

Dante, *Purchas, Pilgrim.* ii. 1002; *Gunner, Geog. Zool.* ii. 92;  
*Marmol. Afrique*, i. 52.

Afrikanische Zivergochs, *Borowsky, Thier.* i. 42; *Halle vierfuss.* 278.

Kleiner Afrikanischer Ochs, *Klein, Thiere*, 12. 35.

Afrikanische Buffel, *Fisch. Natursys.* i.

*Bos Cafer*, *β. Bubalus africanus*, *Der Dante, Donnd. Beytr. Zool.* 703.

*Bos Dante*, *Link, Beytr. Nat.* ii. 95, 1795; *Meyer, Zool. Arch.* 188, 1796.

*Bos Bubalus africanus*, *Brisson, R. A.* 79.

*Bos Taurus africanus*, *Fischer, Syn. Mam.* 500.

Salam Buffalo, *Whitfield.*

Dwarf Bull, *Penn. Syn.* 9. t. 1. f. 1, 2, 3.

? Egyptian Zebu, *Knight, Mus. Anim. Nat.* f. 723, 724; *Long, Egypt. Antiq. Brit. Mus.* ii. 57. f. 169, lower figures.

*Hab.* Africa. West Africa; Salam; *Whitfield*.

Skin in a bad state. Gambia. Presented by the Earl of Derby.

#### OSTEOLOGY.

Two skulls. Gambia. Presented by the Earl of Derby.

This animal agrees better than the Zebus with the figure of the Humped Cattle on the ancient Egyptian tombs.—*Long's Egypt*, p. 57. f. 169.

Mr. Whitfield brought a pair of these animals. The male (now in the Zoological Gardens, 1850) is white, with a few brown specks on the head; the female yellow-brown, the head even narrower than that of the male. Purchas describes them as yellow.

#### *Hybrids with wild species.*

1. Between *Bos Indicus* and *Bibos frontalis*. Blackish, fore-legs white, face and withers brown.

Gyale at Barracpore, *Hardw. Icon. ined. Brit. Mus.* n. 10,975. t. 169, 170, copied.

Jungly gau, *Bos Sylhetanus*, *F. Cuvier, Mamm. Lithog.* t. ,  $\delta$  &  $\text{♀}$ ; *H. Smith, Griffith, A. Kingd.* iv. 406.

Domestic Gyal, *Colebrook, Asiat. Research.* viii. 511; *Lesson, Compt. Buffon*, x. 317.

*Hab.* India.

2. Hybrid between a *Yak* bull and a *Zebu* cow.

Tail elongate, bushy nearly to the base; withers highly crested. Black, with a white spot on withers; in winter covered with long silky hair, in summer with shorter hair, having a crest of long hair on the dewlap, and a tuft of elongated hair on the upper part of each leg. Muffle smooth.

Hybrid Bull, *Mitchell, Proc. Zool. Soc.* 1847, 172. t. 15.

This animal was imported as a *Yak*; it was for some time at the Gardens of the Zoological Society, but has been lately transferred to Knowsley.

The travellers in Tibet state that half-bred *Yak* are common as domestic cattle.

#### 2. BUBALUS.

Horns depressed or subtrigonal at the base, inclining upwards and backwards, conical, and bending upwards at the tip, on a plane rather in front of the occipital ridge; forehead rather transverse, convex, shelving before and behind; the intermaxil-

laries elongate, extending back and between the nasal and cheek bones; teats in a cross series, the outer one rather before the others.

Bubalus, *H. Smith in Griff. A. K.* v. 182; in *Fischer, Syn.* 681.

Bos (bubali), *Sundevall, Pecora*, 77.

Bubalus, sp., *Turner, Proc. Zool. Soc.* 1849.

Syncerus, *Hodgson*, 1847.

\* *Horns separate, not dilated at the base, directed backwards and incurved at the tip.* Bubalus, *Hodgson*.

# I. BUBALUS BRACHYCERUS. The ZAMOUSE.

Forehead flat; horns short, thick, depressed at the base; ears very large, strongly fringed on the edge, and with two diverging longly fringed lines within; fur short, close, brown. *Male adult* with tuft of long hair on legs.

Bos brachyceros, *Gray, Mag. Nat. Hist.* 1837, t. 589; *Ann. Nat.*

*Hist.* ii. 284. t. 13, young female; *List Mam. B. M.* 153; *Cat.*

*Osteol. Sp. B. M.* 54; *Roulin, D'Orb. Dict. Univ. Hist. Nat.*

(*Bœuf*) ii.

Bubalus brachycerus, *Gray, Knowsley Menag.*; *Turner, P. Z. S.* 1849.

Bos bubalus, *Children in Denham & Clapperton's Trav. in Africa.*

Zamouse, *Denham and Clapperton's Trav. Cent. Africa.*

Bos Caffer, *Ruppell, Abyssinia, spec. in Mus. Frankfort.*

Bos Caffer junior?, *Sundevall, Pecora*, 202.

*Hab.* West Africa, Sierra Leone, Abyssinia.

Two heads of adult covered with the skin. Central Africa. Presented by Capt. Clapperton, R.N.

## OSTEOLOGY.

Skeleton of female. Gambia. Presented by the Earl of Derby.

Mr. Blyth has noticed two species of Wild Ox found in North-west Africa:—

1. Sherif al Wady (*Bos Atlanticus, Blyth*), from Mount Atlas. One lived some months at Tangiers.

2. Wadan? or Pécasse?, with a flowing nuchal mane; found in large herds at Rabat and Salee, on the Barbary Coast.—*Ann. N. H.* ix. 62.—This is no doubt the

Bos Pegassus, *H. Smith, Griff. A. K.* iv. 386. t. v. 890; *Fischer, Syn. Mam.* 652; *Blyth, Ann. Nat. Hist.* ii. 288.

Pegassus, *Plinii Hist. Nat.* viii. 21. Wadan, *Lyons Travels*.

## 2. BUBALUS BUFFELUS. The BUFFALO.

Forehead convex, rounded; horns large, flattened at the base, black, on the plane of the face, bent down and recurved at the tip; ears not quite half the length of the head, slightly ciliated; fur rough, irregular, bristly, often very far apart, on the face before the eyes two-rowed.

*Bos bubalus*, *Brisson*, *Règ. Anim.* 81; *Gmelin*, *S. N.* i. 206; *Schreb. Saughth.* t. 300 A; *Bechst. Naturg. Deutsch.* i. 298; *Klein, Annot. Bovis Bubali*, t. ; *Cuvier, D. Sci. Nat.* v. 25; *Règ. Anim.* i. 270; *Desm. Nouv. Dict. H. N.* iii. 531; *Mamm.* 494; *Desmoul. Dict. Class. H. N.* ii. 366; *Fischer, Syn. Mam.* 495. 652; *H. Smith, Griff. A. K.* iv. 392. t. . v. 892; *Sundevall, Pecora*, 203; *Pallas, Zool. R. A.* i. 247.

*Bos bubalis*, *Linn.* *S. N.* i. 99; *Erl. Syst.* 238; *Hodgson, Proc. Zool. Soc.* 1834, 99.

*Bos buffelus*, *Blumenb. Handb.* 121.

*Bubalus buffelus*, *Gray, Cat. Mam. B. M.* 152; *Cat. Hodgson Coll. B. M.* 25; *Cat. Osteol. Spec. B. M.* 54; *Turner, Proc. Zool. Soc.* 1849; *Bonap. Ind. Mamm. Eur.* 36. 1845.

*B. Bubalus Bubalus*, *H. Smith.*

*Bubalus ferus Indicus*, *Hodgson, Icon. ined. in B. Mus.* t. 139.

*Bos kerabau*, *Müller, Nederl. Verhand.* i. t. 41.

*Buffelus*, *Aldrov. Bisulc.* 365. fig. 366.

*Buffle*, *Buffon, Hist. Nat.* xi. 284. t. 25; *Bailly, Ann. Sci. Nat.* ii. 369. t. 16; *F. Cuvier, Mam. Lithog.* t.

*Büffel*, *Meyer, Thier.* ii. t. 45.

*Buffalo*, *Penn. Syn.* 7; *Shaw, Zool.* ii. 401. t. 211.

*Wild Buffalo*, *Hodgson, Journ. Asiat. Soc. B.* i. 348.

*Arnee, Knight, Mus. Anim. Nat.* f. 747.

*Hab.* South Europe; North Africa; India; and Indian Islands.

*Var. 1.* Body nearly naked.

*Naked Buffalo*, *Penn. Syn. Quad.* i. 8. t. 2. f. 1.

*Bos bubalus minor*, *Fischer, Syn.* 495.

*Hab.* Java.

A young specimen. *Manilla.* From the Gardens of the Zoological Society.

*Var. 2.* Horns very much elongated, nearly smooth, curved at the tips.

*Sukotyro* or *Buffalo*, *Sloane, Phil. Trans.* 26, 1727, n. 397. p. 222. f. 2, 3; *Pennant, Quad.* 25.

*Arnee, Anderson, The Bee*, 1792, xii. 105. fig. 267. t. . f. c. d.

*Bos Arnee*, *Shaw, Zool.* iv. 400. t. 210; *Kerr, Anim. Kingd.* 336. t. 295; *Blumenb. Abbild.* t. 63; *Handb.* 122; *Cuvier, Dict. Sci. Nat.* v. 27.

*Bubalus Arna* (var. *Macrocerus* et *Spirocerus*), *Hodgson, J. A.*

*S. B.* 1841, x. 912; *Calcutta J. N. H.* iv. 279; *Icon. ined. B. M.* t. 138.

*Bos bubalus*, arnee, *Fischer, Syn. Mam.* 495, 653.

*Bos Bubalus arni*, *Sundevall, Pecora*, 202.

*Hab.* India.

*Var.* 3. Domestic Buffalo of the Island of the Soudes.

*Bos Bubalus*, var. domest. Sonda, *Müller, Verh. Ind. Arch.* t. 41.

#### OSTEOLOGY.

*Bos bubalus*, *Cuvier, Oss. Foss.* iv. 122. t. 9. f. 11, 12, 13, t. 10. f. 7, 8, 9, 10; *Daub. in Buffon, H. N.* xi. t. 28. t. 41. f. 1, 2, 3; *Blumenb. Abbild.* t. 63.

Horns, separate, thick, 48 inches long, 18 inches in circumference at base. India.

Skull and horns. India.

Horns, very long, separate, 78 inches.

Skull and horns.—*Figured Griffith, A. K.* t. 201. f. 23.

Skull and horns.

Horns, separate, slender. India.

Skull and horns.

Frontal bone and horns, short.

Skull, with horns, polished. Neilgheries. Presented by General Hardwicke.

Skull, with horns, domestic variety. India. Presented by B. H. Hodgson, Esq.

Two skulls with horns, wild variety. India. Presented by B. H. Hodgson, Esq.

*B. B. macrocerus*, *Hodgson, l. c.* 912.

A pair of broad elongated horns. Presented by B. H. Hodgson, Esq.

A pair of horns, very slender. Presented by B. H. Hodgson, Esq.

Skull, with horns, tame variety. India. Presented by B. H. Hodgson, Esq.

*B. B. spirocerus*, *Hodgson, l. c.* 912.

#### DRAWINGS.

Drawing of a male.—*Hodgson, Icon. ined. B. M.* t. 138. f. 1, copied. Presented by B. H. Hodgson, Esq.

Drawing of four specimens.—*Hodgson, Icon. ined. B. M.* t. 139, copied t. 141. Presented by B. H. Hodgson, Esq.

Drawing of four specimens.—*Hodgson, Icon. ined. B. M.* t. 140. Presented by B. H. Hodgson, Esq.

Drawing of a male, three years old, with details of head.—*Hodgson, Icon. ined. B. M.* t. 142. Presented by B. H. Hodgson, Esq.

Drawing of horns of wild.—*Hodgson, Icon. ined. B. M.* t. 145. f. 1, a. Presented by B. H. Hodgson, Esq.



Drawing of horns of tame.—*Hodgson, Icon. ined. B. M. t. 145. f. 3.* Presented by B. H. Hodgson, Esq.

Drawing of two horns of Indian Buffalo sent to Zool. Soc.—*Hardwicke, Icon. ined. B. M. 10,975. t. 173, 174.*

Drawing of horns of Indian Buffalo.—*Hardw. Icon. ined. B. M. 10,975. t. 175, 177.*

Drawing of horns of domesticated Buffalo of Prince of Wales' Island.—*Hardw. Icon. ined. B. M. 10,975. t. 176.*

Domestic Buffalo of Polu Penang.—*Hardw. Icon. ined. B. M. 10,974. t. 108.*

Common domesticated Buffalo of Bengal.—*Hardw. Icon. ined. B. M. 10,974. t. 105.*

Drawing of Indian Buffalo.—*Hardw. Icon. ined. B. M. 10,975. t. 172, 178.*

"The *Bhainsa* or Tame Buffalo are universal in India. The *Arna* or Wild Buffalo inhabits the margins rather than the interior of primæval forests. They never ascend the mountains, and adhere, like the Rhinoceros, to the most swampy sites of the district they inhabit. There is no animal upon which ages of domesticity have made so small an impression as upon the Buffalo, the tame being still most clearly referable to the wild ones at present frequenting all the great swampy jungles of India."—*Hodgson.*

"In the wilderness, as in the cow-house, there is a marked distinction between the long- (*Macrocerus*) and curved-horned (*Spirocerus*) Buffaloes.

"The *Arna* ruts in autumn, gestating ten months, and produces one or two young in summer. It lives in large herds, but in the season of love the most lusty males lead off and appropriate several females, with which they form small herds for the time. The wild Buffalo is fully one-third larger than the largest tame breeds, measuring  $10\frac{1}{2}$  feet from snout to vent, and 6 or  $6\frac{1}{2}$  feet high at the shoulders, and is of such power and vigour, as by his charge frequently to prostrate a well-sized elephant. It is remarkable for the uniform shortness of the tail, which does not extend lower than the hock, for the tufts which cover the forehead and knees, and lastly, for the great size of its horns; they are uniformly in high condition, so unlike the leanness and angularity of the domestic Buffalo even at its best."—*Hodgson.*

**\*\*** *Horns much enlarged and close together at the base, spreading out on the side of the head and recurved at the tip; ribs very wide, t. 2.*

*Syncerus* (Caffer), *Hodgson, Various gen. Ruminants, 1847, 25, note.*  
*Bubalus*, sp., *Ham. Smith in Griffith A. K.*

## 3. BUBALUS CAFFER. The CAPE BUFFALO.

Forehead broad. Horns roundish at the end, depressed, and very rugose at the base; near the base becoming dilated, at length very broad, rugose, very convex, and close together over the forehead. Ears very large, half as large as the head, broad, acute, ciliated. Skin bluish purple or black, nearly naked, with some two-rowed diverging bristles on the middle of the back.

*Bos caffer*, *Sparm. K. S. Veter. Akad.* 1774-79, t. 3; *Griffith, A. K.* iv. 384. t. . young, v. 889; *Harris, Wild Animals Africa*, t. 13, and head; *Zimmerm. Geogr. Gesch.* ii. 90; *Gmelin, S. N.* i. 207; *Schreb. Saugh. t.* 301; *Cuvier, Dict. Sci. Nat.* v. 28; *Règ. Anim.* i. 271; *Desm. Nouv. Dict. H. N.* iii. 527; *Mam.* 494; *Ency. Méth. t.* 45. f. 5; *Thunb. Mém. Act. Petersb.* iii. 318; *Vollborth, Comm. Anat. Berol.* 1826; *Desmoul. Dict. Class. H. N.* ii. 367; *Fischer, Syn. Mam.* 494, 652.

*Bubalus caffer*, *Gray, List Mam. B. M.* 153; *Cat. Osteol. Sp. B. M.* 54; *Turner, Proc. Z. Soc.* 1849.

Cape Ox, *Pennant*; *Shaw, Zool.* ii. 416; *Harris, W. Anim. Afr.* t. 13.

Buffel, *Sparm. Reise*, 297, 379, &c. t. 2.

Dawf Ox, *Pennant, Syn. Quad.* i. 9. t. 2. f. 3, young horns.

Wilde Buffel, *Dutch at Cape*; *Forster, Reise die Welt*, i. 85.

Qu'araho, *Hottentots*.

Cape Buffalo, *Knight, Mus. Anim. Nat.* f. 751, 753.

Buffalo, *Bewick, Hist. Quad.* 47.

*Hab.* S. Africa, in the Deserts, near Cape of Good Hope.

A male, not in a good state. South Africa. Presented by W. Burchell, LL.D.

A male. South Africa. Presented by the Earl of Derby.

OSTEOLOGY. Skulls, adult and young, t. 2. f. 1, 2, 3.

Buffle de Cap, *Daub. in Buffon H. N.* xi. 416. t. 41; *Cuvier, Oss. Foss.* iv. 132. t. 9. f. 14, 15; *Vollborth, de Bobus, &c.* 1826, t. 3.

Frontal bone and horns, young. South Africa. From Mus. Royal Society.

Skull and horns. South Africa.

Skull and horns. South Africa.

Skeleton of male. South Africa. From the Gardens of the Zoological Society.

The horns of the young specimen are depressed and rugose, and very different from those of *B. brachyceros*, which Prof. Sundevall considers as the young of this species. The pair of young horns which was in the Museum of the Royal Society (*Grew, Rar.* 26), figured by *Pennant (Syn. t. 2. f. 3)*, is now in

the British Museum, and at once shows the distinctness of these two species.

### 3. ANOA.

Horns subtrigonal, nearly parallel, round at the tip, depressed at the base, and slightly keeled on the inner edge, straight, nearly on the plane of the face on the hinder edge of the frontal ridge. Intermaxillary elongate, high up between the maxillæ and the nasal. Muffle large, rather narrow below. Hoofs very broad. Ears small, narrow, short. Tail elongate, tufted at the end. Hair of the back, from the nape to the pelvis, reversed. *Skull*, t. 3. f. 1, 2.

Anoa, *Leach*; *H. Smith, Griffith A. K.* v. 182; *Sundevall, Pecora*, 74.

Antilope, § Anoa, *Fischer, Syn. Mam.* 647.

Bubalus, sp., *Turner, Proc. Zool. Soc.* 1849.

Bos, sp., *Meyen*; *Gray, Spic. Zool.*

Mr. Turner observes: "Although Major Smith was deceived as to the affinities of the *Anoa*, later as well as earlier naturalists have assigned it to its true place, and a glance at the stuffed specimen in the British Museum leaves the matter beyond a doubt. I have examined the skull in the Museum of the College of Surgeons, and cannot see that it has even a title to generic distinction. Naturalists seem at all times to have been prone to assign generic rank to whatever was mysterious or difficult to classify, and I can in no other way account for this species being made a genus."—*Proc. Zool. Soc.* 1849. Mr. Turner must have observed the *skull* very superficially, for it offers many characters, especially in the palate, which separate it from the Buffaloes and all the other *Bovæ*, t. 3. f. 1, 2.

### 1. ANOA DEPRESSICORNIS. The ANOA.

Reddish brown, with three small white spots on the cheek. Male black, spot on cheek white. Female and young brownish black.

Antilope (*Anoa*) *depressicornis*, *H. Smith, G. A. K.* iv. 293. t. v. 867; *Gray, Spicil. Zool.* t. 11. f. 23; *Fischer, Syn.* 647.

Antilope *depressicornis*, *Quoy et Gaim. Ann. Sci. Nat.* xvii. 623. t. 20; *Voy. Astrol. Zool.* i. 136. t. 26; *Férussac, Bull. Sci.* xix. 108; *Lesson, comp. Buffon*, x. 299. t. 65. f. 2.

♀ *Anoa compressicornis*, *Leach, MSS.*

Antilope *depressicornis*, *Leach*; *Gray, Spic. Zool.* t. 11. f. 23; *H. Smith, G. A. K.* v. 867. t. 181. f. 4, head.

Antilope *platyceros* et Antilope *Celebica*, *Temm. Mus. Leyden.*

*Bos bubalis* β. *Anoa*, *Penn. Quad.* 26; *Meyer, Zool. Arch.* 184, 1796.

*Bubalus depressicornis*, Turner, *Proc. Zool. Soc.* 1849.

Anoa, *Loten MSS. in Brit. Mus.*; *Penn. Syn.* 6; *Quad.* 26; *Knight, Mus. Anim. Nat.* f. 746.

Anoa depressicornis, *Sundevall, Vet. Akad. Handl.* 1844, 199; *Gray, List Mam. B. M.* 153; *List Osteol. B. M.* 54; *Gray, Knowsley Menag. t.*

*Hab.* Celebes.

Male and female. Celebes. From the Leyden Museum.

OSTEOL. Skull, t. 3. f. 1, 2.

Skull and horns. Celebes. Presented by General Hardwicke.

Skull and horns. Mauritius?

Skull and horns. Mauritius?

This animal was first noticed by Governor Loten. It was afterwards described by Colonel Hamilton Smith from a head with horns in the Museum of the College of Surgeons. A similar head was received by General Hardwicke (which was given by him to the British Museum), accompanied by a sketch of the head and front part of the body of the animal, which is copied in Gray's *Spicilegia*. MM. Quoy and Gaimard afterwards published a figure of the animal, and took two male specimens with them to Paris, one of which was transmitted to Knowsley, in exchange for the specimen of *Oreas Canna* sent to Paris by the Earl of Derby: this specimen is figured in the *Knowsley Menagerie*.

\* *Intermaxillaries short, triangular, not reaching to the edge of the nasal bone; the upper lip bald, callous and moist, only as wide as the inner edge of the nostrils.*

Mr. Turner observes: "I fear that Mr. Gray's distinction in the extent of the intermaxillary bones upon the sides of the nasal aperture will not always hold good."—*Proc. Zool. Soc.* 1849. Since this remark was penned, I have re-examined many specimens of the skull of this genus and of other oxen, and do not find any reason to doubt the validity of the distinction; I have not found a single Bison's skull with an elongated intermaxillary, nor an Ox or Buffalo with a short one. It would have been better if Mr. Turner had cited the example which made him doubt; when I applied to him on the subject, he owned that he could not refer me to a specimen to verify his remarks.

#### 4. BIBOS.

Horns depressed at the base, directed outwards, posterior on the hinder ridge of the frontal bone, which is often very prominent, recurved at the tip. Withers high, keeled, supported by the spinous processes of the dorsal vertebra, and suddenly lower be-

hind. The intermaxillaries are short and triangular, and do not reach to the nasals. Brown or black (adult males). Legs beneath the knees (and sometimes the rump) white. The baldness of the upper lip converging beneath from the inner edge of the nostrils. *Skull*, t. 3. f. 3.

*Bibos*, Hodgson; Gray, *Knowsley Menag.*

*Bison*, sp., *Ham. Smith in Griffith A. K.* v. 371; *Fischer, Syn. Mam.* 651.

*Gareus*, Hodgson, *Var. Genera Ruminants*, 1847, 21.

*Bos* (*Boves propriè*), part., *Sundevall, Pecora*, 200, 1844.

*Bos*, sp., *Turner, Proc. Zool. Soc.* 1849.

Professor Sundevall regards the three species of this genus as subvarieties of a variety of the Common Bull, *Bos Taurus* (*Pecora*, 200, 1844).

† *Forehead flat. Horns broad, depressed, black. Front half of back with an elongated keel*, t. 3. f. 3. *Probos*, Hodgson.

# 1. BIBOS FRONTALIS. The GAYAL.

Black; lips, forehead and legs grey; inside of ears white; forehead flat, very broad. Horns depressed, broad at the base, conical, black.

*Bos bubalus* var. c. *Guavera, Penn. Quad.* i. 27.

"*Bos Guavera, Penn.*," *Buchanan, Icon. ined. Mus. Ind. Comp.* t. 7.

*Bos bubalis* γ. *Guavera, Meyer, Zool. Arch.* 184, 1796.

*Bos frontalis*, *Lambert, Linn. Trans.* vii. t. 4, young ♂; *Gray, List Mam. B. M.* 151; *Cat. Hodgson Coll. B. M.* 24; *Delessert, Souvenir Ind.* t. , not good.

*Bos Gayeus* (*Assel Gayal*), *Colebrook, Asiatic Research.* vii. 511. t. 8; *Hardw. Zool. Journ.* iii. 233. t. 7. f. 1; *Lesson, Compl. Buffon*, x. 317.

*Bos Taurus* var. 3, subvar. 1. *frontalis*, *Sundevall, Pecora*, 200, 1844.

*Bos* (*Bison*) *Gaveus*, *H. Smith in Griffith A. K.* iv. 406. t. , v. 897; *Fischer, Syn.* 651, 654; *Hodgson, Journ. Asiat. Soc. Beng.* 1841, x. 912. 470. t. 1. f. 1.

*Bibos frontalis*, *Gray, List Mam. B. M.* 151; *List Osteol. Sp. B. M.* 24; *Knowsley Menag.*; *Lesson, Nov. Tab. Reg. Anim.* 184.

*Gayal*, *Knight, Mus. Anim. Nat.* f. 741, 742?, 743, 744.

*Hab.* India, Chittagong.

Male. India. Nepal. Presented by B. H. Hodgson, Esq.

**OSTEOL.** *Skull*, t. 3. f. 3.

*Gyal* of Sylhet (*Bos gaveus*), *Hodgson, J. Asiat. Soc. Beng.* 1841, x. 470. t. 1. f. 1; *Hardw. Zool. Journ.* iii. t. 7. f. 1.

Two skulls of the adult male. The Tarai. Presented by B. H. Hodgson, Esq.

Skull, half-grown, male. The Tarai. Presented by B. H. Hodgson, Esq.

Skull and some bones of foetal specimen. Presented by B. H. Hodgson, Esq.

Skeleton, imperfect. Presented by B. H. Hodgson, Esq.

#### DRAWINGS.

Assal Gyal, *Hardw. Icon. ined. B. M. n. 10,975. t. 168.*

True Asseel Gayal, *Hardw. Icon. ined. B. M. n. 10,794. t. 106,* head copied from former.

Drawing of two males.—*Hodgson, Icon. ined. B. M. t. 135.* Presented by B. H. Hodgson, Esq.

Drawing of two males.—*Hodgson, Icon. ined. B. M. t. 136.* Presented by B. H. Hodgson, Esq.

Drawing of two males.—*Hodgson, Icon. ined. B. M. t. 137.* Presented by B. H. Hodgson, Esq.

Drawing of a male.—*Hodgson, Icon. ined. B. M. t. 138. f. 2.* Presented by B. H. Hodgson, Esq.

Drawing of horns.—*Hodgson, Icon. ined. B. M. t. 145. f. 5, 6.* Presented by B. H. Hodgson, Esq.

Dr. Hamilton Buchanan's figure in the Library of the India House (marked *Bos Guavera*, Penn. t. 7) was the first and is the best.

The *Gavi* or *Gabi* is more than half redeemed from the wild state, like the *Yak* of Tibet.—*Hodgson, l. c. 22.*

The *Jungly Gau* (*Bos Sylhetanus*) of M. F. Cuvier's *Mammalia* is from a tracing made by M. Duvaucelle from a drawing in General Hardwicke's collection (marked "*Gyale* at Barrackpoor," *Icon. ined. B. M. n. 10,975. t. 169, 170*), taken from a hybrid specimen bred between a *Domestic Gyal* and a *Zebu*. It has a larger, deeper and more waved dewlap than the wild species, and differently shaped horns. It was never alive in Paris, nor even seen alive by M. Duvaucelle.

†† *Forehead concave. Horns pale, rather depressed at the base. Back with a prominent keel over the shoulder, and another on the middle of the back. Bibos, Hodgson.*

#### 2. BIBOS GAURUS. The GOUR or GAUR.

Hind hoof only half the size of the front. Brown; legs white.

**Bos Gour**, *Trail, Edinb. Phil. Journ.* 1824, 334; *Harlow. Zool. Journ.* iii. 232. t. 7. f. 2; *Mem. Mus.* ix. 71; *Férussac, Bull. Sci.* xiv. 252; *Lesson, Compl. Buffon*, x. 316; *Fischer, Syn. Mam.* 497.

**Bos Gaur**, *Evans*.

**Bos (Bison) Gaurus (Gour)**, *Hamilton Smith in Griffith A. K.* v. 373; *Fischer, Syn. Mam.* 653; *Elliot, Madras Journ. Sci.* 1840, t. 5. adult, t. 6. f. 1 ♂. f. 2 ♀. skull.

**Bos Taurus**, var. 3, subvar. 2. **Gaur**, *Sundevall, Pecora*, 201.

**Bos (Bibos) cavifrons**, *Hodgson, Journal Asiat. Soc. Beng.* 1837, vi. 223, 299, 745. t. 39, x. 911; *Elliot, Madras Journ. Sci.* 1840, 37.

**Bos Hardwickii** (Gour), *J. Brookes, Cat. Mus.* 65 (1825).

**Bos Silhetanus**, *Delessert, Rev. Zool.* 1839, 129.

**Bos aculeatus**, *Schinz.; Cuvier, Thierr.* iv. 492.

**Bisonius subhæmachalensis**, *Hodgson, Icon. ined. B. M.* t. 135; *Calcutta Journ. Nat. Hist.* iv. 289.

**Bos (Bison) Gour**, *Lesson, Nov. Tab. Reg. Anim.* 184.

**Bibos gaurus**, *Hodgson, Icon. ined. Brit. Mus.* t. 137; *Gray, Cat. Hodgson Coll. B. M.* 24.

**Gaour**, *Geoffroy, Ann. Mus. H. N.* ix. 71.

**Gaur**, *Johnston, Sketch Indian Sports*, t.

**Gour**, *Knight, Mus. Anim. Nat.* f. 746.

**Gauri Gau**, *of the Tarai*.

**Inhab. India.** Mountain district, Nepal. The male is called **Gour**, and the young **Pararah**; the female **Gouvin**, and the young **Pareeah**, in Malacca. Called **Gaviya** by the Mahrattas. Male, stuffed.

**OSTEOL.** *Elliot, Madras Journ. N. H.* x. 227. t. . f. , skull.

**Gouri Gau of Nepal (Bibos cavifrons)**, *Hodgson, J. A. S. Bengal*, x. 1841, 470. t. 1. f. 2, t. 2, 3, skulls.

Two skeletons. Nepal.

Skeleton, imperfect. Nepal. Presented by B. H. Hodgson, Esq.

Skull and horns of male. Nepal. Presented by B. H. Hodgson, Esq.

Skull and horns of female. Nepal. Presented by B. H. Hodgson, Esq.

Skull and horns. India.

Skull and horns, with skin on face. India. Presented by General Hardwicke.

Horns, separate, polished. India.

Horns, separate. India.

Horns, separate, young. India.

Horns, single horn. India.  
 Horns, single horn. India.  
 Horns, single horn. Nepal. Presented by B. H. Hodgson,  
 Esq.

# DRAWINGS.

Bos Gour, Hardwicke, *Icon. ined.* B. M. 10,974. t. 107.

The *Gours* inhabit the primitive forests of India, under the great ranges of mountains; they rut in winter, procreate in autumn, producing one at a birth. The herds are ordinarily rather numerous, twenty, thirty, forty, and sometimes even double that number being found together; but in the breeding season not above ten or fifteen cows, with a single mature, vigorous bull, who jealously expels every young or old male from his harem. They entirely avoid the open Tarai on the one hand, and the hill on the other, adhering to the most solitary part of the Saul forest, close to and between the salient spurs of the hills, where the periodical firing of the undergrowth of the forest never reaches. They feed early and late in the more open glades of the forest, posting sentinels the while, and manifesting in their whole demeanour a degree of shyness unparalleled among the *Bovines*. They never venture even in the rains, when there is abundance of rank vegetation to cover their approaches, into the open Tarai, to depredate on the crops, as the *Wild Buffaloes* constantly do; nor do they ever associate or have sexual commerce with the tame cattle, though immense numbers of the latter every spring are driven into their retreats, to feed and remain there in a half-wild condition for three or four months, when the *Wild Buffaloes* frequently have sexual intercourse with the tame ones of their kind, of which likewise vast numbers are despatched there.

Old males of the *Gour* are often found solitary, wandering in the forests they frequent, especially in winter; but these have probably been recently expelled the herd by their more vigorous juniors, and reunite themselves with some herd after the season of love and contention has passed.

It is exceedingly difficult to rear the *Gour* in confinement. Nor did I ever know a successful experiment, though the attempt has been for fifty years constantly made by the Court of Nepal, which finds no difficulty in rearing *Wild Buffaloes* and causing them to breed in confinement with the domestic species, which is thus greatly improved in size and other qualities.

The *Gours* are exceedingly shy, and when approached they retreat as long as they can; but if compelled to stand and defend themselves, they do so with a courage and determination not to be surpassed.



The beef of the *Gour* is unequalled for flavour and tenderness; but to the Aborigines only is it illicit food, and not to all tribes of them; nor are any of them allowed to kill it in Hindu kingdoms.

Capt. Tickell, a good observer, believes there are two species of *Bibos* in the *Chola Nagpoor* territories alone.—*Hodgson, l. c.* 24.

Mr. Hodgson appears to think the *Bibos* found beyond the *Brahmaputra* is a different species.

Mr. Elliot's account of the habit of those found in the Deccan differs in several particulars from that given by Mr. Hodgson.

### 3. BIBOS BANTING. The BANTING.

Black, distinct large spot on rump and legs white. Calf pale brown, with a dorsal streak, widest behind, and tip of tail black; rump and legs like back, not white, as in the adult.

Bos Banting, *Raffles, Linn. Trans.* xiii.

Bos Taurus var. 3, subvar. 1. Banting, *Sundevall, Pecora*, 201.

Bos leucoprymnus, *Quoy & Gaim. Zool. Astrol.* i. 140, 1830;

*Lesson, Compl. Buffon*, x. 319.

Bos (Taurus) leucoprymnus, *Lesson, Nov. Tab. Reg. Anim.* 185.

Bos frontalis, part., *Fischer, Syn. Mam.* 550.

Bos bantiger, *Temm. Mus. Leyden.*

Bos Sondaicus, *Müller, Nederl. Verhand.* i. 45. t. 35, 39.

Sumatran Ox, *Raffles, Trans. Linn. Soc.* xiii.; *Lesson, Compl. Buffon*, x. 315.

*Hab.* Java. Borneo. Bali.

Stuffed male. Java. From the Leyden Museum.

Skin of female. Java. From the Leyden Museum.

OSTEOLOGY. Bos Sondaicus, *Nederl. Verhand.* i. t. 36, 39.

Skeleton of male and female. Java. From the Leyden Museum.

ANAT. *Müller, Verhand. Ind. Arch.* t. 37, 38, 39.

b. Bisons. Covered with short, crisp wool; shoulder higher than the haunches; cannon-bone of the hind-leg longer than the fore. Ribs fourteen or fifteen pairs.

Bison, *Gray, Knowsley Menag.* 1849.

### 5. BISON.

Muffle short and scarcely reaching the hinder edge of the nostrils, as wide as the space behind the inner edge of the nostrils. Horns round, rather depressed at the base, lateral, coming out before the ridge of the occiput, curved upwards and outwards.

In the skull the frontals are broader than long. The intermaxillæ are very short, triangular, not reaching nearly to the nasal bones. The head, crown and shoulders covered with longer curled hair; dewlap none; teats four in a square. Skull, t. 4. f. 1, 2.

The flesh smells of musk, hence called *Bisam*, which has been changed into *Bison*. See *Pallas, Zool. Ross. Asiat.* 247.

*Bison*, *H. Smith, Griff. A. K.* iv. 182; *Fischer, Syn.* 651.

*Bison*, *Bojanus, N. Act. Acad. Nat. Cur.* xiii.; *Owen, Brit. Foss. Mam.* 491, 1846.

*Bison*, sp., *Turner, Proc. Zool. Soc.* 1849.

*Urus*, sp., *Owen, Rep. Brit. Assoc.* 1843, 232.

*Aurochs*, sp., *Cuv. Ann. Mus.* xii. 379; *Oss. Foss.* iv.

*Bonassus*, sp., *Wagner.*

*Bos γ. Bison*, *Sundevall, Pecora*, 78.

† *Tarsi elongate, fore and hind quarters subequal.*

# 1. BISON BONASSUS. The BISON.

Fur blackish brown, short; of neck and shoulders longer, of chin and throat, elongate, forming a dependent mane; fore and hind legs subequal; tarsi elongate.—*Bos Bison*, *Linn. S. N.* xii.

*Bos* (*Bison*) *Bison*, *H. Smith in Griffith A. K.* v. 893; *Fischer, Syn.* 654; *Sundevall, Pecora*, 203; *Baër. Bull. Petersb.* i. 53.

*Bos urus*, *Bodd. Elench.* 1788; *L. H. Bojanus, Comm. Nov. Act. Acad. Nat. Cur.* xiii. 414. t. 20, 28; *Schreb. Saugh.* t. 295; *Desm. Mamm.* 498; *Fischer, Syn. Mam.* 497; *Eichw. Zool. Spec.* iii. 342. t. ; *Vollborth, Dissert.* i. fig.

*Bos Bison Aurochs*, *Lesson, Nov. Tab. R. A.* 184.

*Bos Taurus Urus*, *Gmelin, S. N.* i. 202; *Pallas, Zool. Ross. Asiat.* i. 242.

*Bos Bonassus*, *Brisson, Reg. A.* 84; *Linn. S. N.* xiii. 99; *Gmelin, S. N.* i. 99; *Eral. Syst.* 235.

*Bison Europæus*, *Owen, Proc. Zool. Soc.* 1848, 126.

*Bos Taurus c. Bison* (*Der Europäische Bison*), *Donnd. Zool. Beytr.* 687.

*Bos Bison seu Bonassus*, *Wagner, Schreb.* 1481, t. 295, 295 B.

*Bison Urus*, *Gray, Cat. Osteol. Spec. B. M.* 55; *Turner, Proc. Z. Soc.* 1848.

*Bison jubatus*, *Plinii Hist. Nat.* viii. c. 15.

*Bison*, *Gesner, Quad.* 31; *Aldrov. Bisulc.* 353. f. 355, 356; *Jonston, Quad.* t. 17. 16; *Nic. Hussoviani de Bisontis Cracov.* 1525, 12; *Herberstein, Rer. Moscow. Comm. Basil.* 1556, 109. fig.; *Gilibert de Bove Litvano*, 1781, 30. fig.; *Zimmer. Geog. Zool.* ii. 84.

- Uri, *Cæs. Gall.* vi. c. 28.  
 Urus jubatus, *Jonst. Quad.* t. 19.  
 Aurochs, *Buffon, Hist. Nat.* xi. 207; *Cuvier, Ann. du Mus.* xii. 379; *Dict. Sci. Nat.* v. 21. t. ; *Rég. Anim.* i. 269; *Oss. Foss.* iv. 109. t. 9, 10, 12; *Desmoul. Dict. Class. H. N.* ii. 364.  
 Afrikanischer Wilder Ochs, *Müller, Naturs.* i. 43; *Borowsky, Thier.* i. 40; *Gatterer, Schaden der Thiere,* i. 128; *Batsch, Thiere,* i. 141; *Graumann, Int. H. N.* 44.  
 Buckelochs, *Gatterer, Brev. Zool.* i. 67.  
 Bonassus, *Plin. Hist. Nat.* viii. 15; *Gesner, Quad.* 145. fig.; *Zimmerm. Geog. Zool.* ii. 93; *Onomat. H. N.* ii. 262; *Brisson, Rég. Anim.* 84; *Klein, Quad.* 13; *Buffon, H. N.*; *Severin, Zool. Hungar.* 35; *Raii Syn. Quad.* 71.  
 Munistier or Mänestier, *Gesner, Thier.* 297. fig.  
 Bos Munistier, *Jonst. Quad.* t. 18, 19.  
 Urochs or Auer Ochse or Auer Ochs, Waldochse, Wilder Ochs or Bergochs, *Müller, Natursys.* i. 436; *Henneberger, Preuss.* § 251. fig.; *Zimmer. Geog. Zool.* ii. 82; *Borowsky, Thier.* i. 39; *Funke, Naturg.* i. 34; *Ebert, Naturl.* i. 284; *Halle Vierfuss.* 280; *Gatterer, Schad. der Thiere,* i. 107; *Beckmann, Naturh.* 10; *Klein, Thiere,* 12; *Martini, Naturlex.* iii. 693; *Batsch, i.* 141; *Boch, Nat. Preuss.* iv. 191; *Hartknoch, Preuss. Hist. i.* 13; *Döbel, Jagerprak.* i. 20; *Jablonsky, Allgem. Lex.* 82; *Severin, Zool. Hung.* 36.  
 Preussische und Lithauische Auerochs, *Pallas, Nord. Beytr.* i. 6.  
 Urus de Prusse et de Lithuanie, *Pallas, Act. Acad. Sci. Petrop.* ii. 1777, 236.  
 Zurb, oder der Lithauische Auerochs, *Jarocki,* 1830, t. 1 ♀. 2 ♂.  
*Hab. Poland. Caucasus.*

Male, stuffed in Russia. Presented by the Emperor of Russia through Sir Roderick Murchison.

#### OSTEOLOGY.

- Bos urus*, *Bojanus, Nov. Act. Acad. Nat. Cur.* xiii. 414. t. 20-23; *Cuvier, Oss. Foss.* iv. 109. t. 9. f. 1, 2, t. 10. f. 1, 2, t. 12. f. 6, 7; *Volkman, Anat. Anim.* i. t. 8, skull; *Owen, Proc. Zool. Soc.* 1848, 132. fig. bones of fore and hind feet; *Vollborth, Dissert.* t.  
*Buffalus*, *Pallas, Nov. Comm. Petrop.* xiii. t. 11, 12.  
 Aurochs foss., *Cuvier, Oss. Foss.* iv. 140. t. 12. f. 1, 2, 4, 11, t. 11. f. 5, fossil.  
 Skeleton. Lithuania. Presented by the Emperor of Russia.

†† Tarsi short, hinder quarters very low.

## 2. BISON AMERICANUS. The AMERICAN BISON.

Crown with long, crisp hair (in all seasons). The fur dark brown; hair of head and shoulders elongate, crisp. Tarsus short, hinder quarters very low. Body and tarsus in winter covered with long hair, in summer nearly naked, except in front of body and head.

*Bos Bison*, Linn. S. N. i. 99; *Erl. Syst.* 233; *Schreb. Saugth.* t. 299; *Blumb. Handb.* 121.

*Bos Bison Americanus*, H. Smith, Griffith A. K. v. 895; Fischer, *Syn.* 653; Sundevall, *Pecora*, 203; Hodgson, *Journ. Asiat. Soc. Beng.* x. 1841, 912.

*Bos Americanus*, Gmelin, S. N. i. 204; Cuvier, *Dict. Sci. Nat.* v. 24; *Règ. Anim.* i. 270; Ossem. *Foss.* iv. 117. t. 11; Desm. *Nouv. Dict. H. N.* iii. 531; *Mamm.* 496; *Ency. Méth.* t. 55. f. 3; Fischer, *Syn. Mam.* 495, 653; Desmoul. *Dict. Class. H. N.* ii. 365; Cuvier & Geoff. *Mam. Lith. t.*; Richardson, *Fauna Bor. Amer.* i. 279; Sabine, *Frank. Journey*, 668; H. Smith, Griffith A. K. iv. 401. t. , v. 895; Pallas, *Zool. Ross. Asiat.* i. 242; Owen, *Brit. Fossil Mam.*

*Bison Americanus*, Gray, *Knowsley Menag.* 49; Turner, *Proc. Zool. Soc.* 1849.

*Taurus Mexicanus*, Hernand. *Mex.* 587. fig. (1651).

*Taureau Sauvage*, Hennipen, *Nouv. Découv.* i. 186. fig. (1699).

*Taurus Ouivirensis*, Nieremb. *Hist. Nat.* 181. fig. from Hernand.

*Tauri vaccæque Quiviræ*, Fernand. *Anim.* 10.

*Tauri novi orbis*, Nieremb. *Hist. Nat.* 182.

Armenta, *Lact. Amer.* 303. fig. from Hernand.

Urus *Bison*  $\beta$ . indicus, *Bison Catesbeji*, Klein, *Quad.* 13.

*Bison*, Ray, *Syn. Quad.* 71; Pennant, *Arct. Zool.* i. 1; Long, *Exped.* iii. 68.

*Buffelo*, Laws. *Carol.* 115. fig.; Brick. *North Carol.* 107. fig.

*Buffalo*, Catesby, *Carol. App.* 27. fig. *App.* t. 20; Harmon. *Journey*, 415; Franklin, *First Journey*, 113 (110. fig. of *Buffalo* Pound).

*Bœuf du Canada*, Charlev. *Nouv. Fr.* iii. 131.

American Oxen, Dobb's *Hudson's Bay*, 41.

American *Bison*, Shaw, *Zool.* ii. 394. t. 206, 207; Knight, *Mus. Anim. Nat.* f. 759-762.

American Bull, Penn. *Syn.* 8. t. 2. f. 2.

American Wild Ox or *Bison*, Warden's *United States*, i. 248.

*Bison* (d'Amérique), Buffon, H. N. *Supp.* iii. 64. t. 5; F. Cuvier, *Mam. Lithog.* t. , adult, young, and very young.

*Bison*, Müller, *Magaz.* i. 186; Bewick, *Hist. Quad.* 43. fig.

Wilde Ochsen und Kuhe, *Kalm, Amer.* ii. 350, 425, iii. 351.

Amerikanische Bison, *Zimmer. Geog. Zool.* ii. 89; *Schæpf. Reise*

*Nordamer.* ii. 167; *Pallas, Nord Beytr.* i. 5.

Bison d'Amérique, *Pallas, Act. Acad. Sci. Petrop.* 1777, ii. 238.

Buklel, Ochse, Bison, Wisent, *Borowsky, Thier.* i. 42; *Blumenb.*

*Handb.* 111.

Nordamerikanischer Bisam Ochs.

*Var. White.*—*Richardson, Faun. Bor. Amer.* 283.

*Hab.* N. America.

Male, stuffed in America. Bank of Yellow River. From M. Audubon's Collection.

OSTEOLOGY. *Skull*, t. 4. f. 1, 2.

*Bos Americanus*, *Cuvier, Oss. Foss.* iv. 117. t. 10. f. 3, 6.

Skeleton of male. North America. Presented by the Earl of Derby.

Skeleton of female. N. America. From the Collection of the Zoological Society.

*Hybrid with Bos Taurus.*

Naals Buffalo, *Americans*; *Fischer, Syn. Mam.* 496.

B. *Nose ovine, covered with hair, or with a small naked space between the rather close converging nostrils. Tail short. Hair during the cold season very long, pendent. Living in the Mountains or Snowy regions.*

Oxen of the Mountains or Snowy regions, *Gray, Knowsley Menag.*

## 6. POËPHAGUS.

Horns subcylindrical, curved outward on the front of the occipital ridge. Nose hairy, with a narrow bald muffle between the nostrils. Hoofs moderately thick, not dilated or expanded on the outer side, square, and straight in front. Tail moderate, not reaching to the hocks, and covered with long hair; teats 4, narrowing behind. Perineum, scrotum, and inside of the thighs and armpits naked. Skull: intermaxillaries short, triangular and acute behind, not reaching to the nasal bones.

Poëphagus, *Gray, List Mamm. B. M.* 153.

Bison, sp., *H. Smith, Griffith A. K. v.* ; *Fischer, Syn.* 651;

*Turner, Proc. Zool. Soc.* 1849.

*Bos poëphagus* (part.), *Sundevall, Pecora*, 202.

Professor Sundevall observes, "Inter tres divisiones generis et

præsertim inter *Bos Bubalum et bidentes* medius videtur."—*Pecora*, 202.

Mr. Turner doubts its distinctness from Bison.—*Proc. Zool. Soc.* 1849.

# 1. POËPHAGUS GRUNNIENS. The YAC OF SARLYK.

Black; back and tail often white.

*Bos grunniens*, *Linn. S. N.* i. 99; *Gmelin, S. N.* i. 205; *Erxl. Syst.* 237; *Zimmerm. Geog. Gesch.* ii. 38; *Schreb. Saugh.* t. 299 A, B; *Blumb. Abbild.* t. 22; *Cuvier, Dict. Sci. Nat.* v. 30; *Rég. Anim.* i. 270; *Oss. Foss.* iv. 129. t. 10. f. 13, 14; *Desm. Nov. Dict. H. N.* iii. 528; *Mamm.* 496; *Ency. Méth.* t. 45. f. 3; *Desmoul. Dict. Class. H. N.* ii. 368, 11; *Fischer, Syn. Mam.* 496, 653; *Hodgson, J. A. S. Beng.* i. 348; *Proc. Zool. Soc.* 1834, 99.

*Bos* (Bison) *Poëphagus*, *H. Smith in Griffith A. K.* v. 896; *Fischer, Syn.* 668; *Hodgson, J. A. S. Beng.* 1841, x. 912, xi. 282.

*Bos* (*Poëphagus*) *grunniens*, *Sundevall, Pecora*, 202.

*Bison Poëphagus*, *Gray, Cat. Hodgson Coll. B. M.* 25; *Turner, Proc. Z. Soc.* 1849.

*Poëphagus grunniens*, *Gray, List Mam. B. M.* 153; *Cat. Osteol. Sp. B. M.* 55; *Knowsley Menag.* 49.

*Bisonius Poëphagus*, *Hodgson, J. A. S. Bengal*, x. 912. 470. t. 1. f. 3; *Calcutta Journ. Nat. Hist.* iv. 289.

*Bos Poëphagus*, *Pallas, Zool. Ross. Asiat.* i. 249; *Nov. Comm. Petrop.* i. 2. 332; *Nord Beytr.* i. t. 1.

*Poëphagus*, *Ælian de Animal.* lib. xv. cap. 14, lib. xvi. cap. 11; *Marco Polo de Region. Orient.* lib. i. cap. 62; *Rubruquis, Hist. Général des Voy.* vii.

Buoi e la codo di cavallo, *N. Conti, Collect. de Ramusio*, i. 340. b.

Oxen (used for riding), *Ysbrand's Travels Muscow*, 50. tab.; *Grew, Mus. Reg. Soc.* 26.

*Vacca grunniens*, or *Buffle mid dem Pferde schweif*, *J. G. Gmelin, Nov. Comm. Petrop.* v. 339. t. 7.

Tangutischen Büffel, *Pallas, Nord Beytr.* i. t. 1. 1780.

*Bubuls*, *Bell, Travels*, i. 212.

*Boebaeli*, *Witsen, N. en O. Tart.* i. 66.

*Bubalus cauda equina*, *Buffle à queue de cheval*, *Pallas, Act. Acad. Petrop.* 1777, ii. 232.

*Vache de Tartarie*, *Buffon, H. N.* xv. 136.

Grunting Ox, *Bewick, Hist. Quad.* 46.

Grunting Bull, *Penn. Syn.* 5.

Yac of Tartary, *Turner, Account*, 186. t. 10; *Shaw, Zool.* ii. 411. t. 213.

*Svora-Goy* or *Yak of Tartary*, *Asiat. Research.* iv. 349. t.

Kalmükische kühe, *Georgi Russland*, i. 208.

Tangutesche kühe, *Pallas, Reise Aus.* iii. 126.

Bœuf velu, *Brayn. Iter Mosc.* 120. t. 129.

Yack, *Desmoul. Dict. Cl. H. N.* ii. 368.

*Var. 1.* Noble Yak. Head erect; hump large; fur very long, nearly reaching the ground; tail bushy.

The Riding Yak, *Hoffmeister, Travels Ceylon, &c.*, 443.

*Var. 2.* Plough Yak. Head dependent; legs short; hair short; tail often cut off.

The Plough Yak, *Hoffmeister, Travels Ceylon, &c.*, 441.

Female, stuffed. Black; tail and middle of back whitish.

Thibet. Presented by B. H. Hodgson, Esq.

*Var. 3.* Hornless Yak. Both sexes without horns.

*Pallas, Act. Acad. Petrop.* 1777, 250. t. 10; *Nord. Beytr.* f. 1. t. 1; *cop. Schreb. Saugth.* t. 299 B.

*Var. 4.* Ghainorik. Larger.

Ghainorik of the Mongolians and Calmucks, *Gmelin; Pallas, Act. Acad. Petrop.* 1777, 255.

Yac, *Stewart, Phil. Trans.* 1777, lxvii. 478.

*Var. 5.* The Wild Yak. Much larger; the withers of the bulls high.

*Hab.* Thibet. Mr. Winterbottom.

OSTEOLOGY. Skull, t. 4. f. 3, 4.

Yac of Thibet, *Hodgson, J. Asiat. Soc. Bengal*, x. 470. t. 1. f. 3, skull.

*Bos grunniens*, *Cuvier, Oss. Foss.* iv. 129. t. 10. f. 13, 14.

Skeleton. Nepal. Presented by B. H. Hodgson, Esq.

Skull and horns.

Two skulls of male. Thibet. Presented by B. H. Hodgson, Esq.

Skull of the female, with the horns bent forward at the tip.

Thibet. Presented by B. H. Hodgson, Esq.

Skull of the female. Thibet. Presented by B. H. Hodgson, Esq.

Pair of horns of the male, of large size. Thibet. Presented by B. H. Hodgson, Esq.

Pair of horns of the female, slender, and bent horizontally.

Thibet. Presented by B. H. Hodgson, Esq.

#### DRAWINGS.

Drawing of a group of the domestic variety.—*Hodgson, Icon. ined. B. M.* t. 143, copied, with front figure left out, t. 144. Presented by B. H. Hodgson, Esq.

Drawing of horns.—*Hodgson, Icon. ined. B. M.* t. 145. f. 4. Presented by B. H. Hodgson, Esq.

**Drawing of horns.**—*Hodgson, Icon. ined. B. M. t. 100. f. 1, 2.*  
Presented by B. H. Hodgson, Esq.

The *Yaks* dislike the warmth of summer, and hide themselves in the shade and water; they swim well; both sexes grunt like a pig. The calves are covered with rough, black, curled hair, like a curled haired dog; when of three months old they obtain the long hair on the body and tail. They willingly live with the common cows, and breed with them. The long white hairs of the tail are dyed red to form the tufts of hair on the caps of the Chinese.—*Pallas, Act. Acad. Petrop. 1777, 250.*

The *Yak* used for the plough are ugly and short-legged, and hold their heads very low; the beautiful long silky hair, hanging from below the belly, is almost, if not entirely, wanting in them, no less than the bushy tail, which their avaricious owners commonly cut off as an article of trade; they are guided by the nose.—*Hoffmeister, Travels in Ceylon, &c., 441.*

The *Yak Ox* used in riding is an infinitely handsomer animal; it has a stately hump, a rich silky hanging nearly reaching the ground, twisted horns, a noble bearing, and an erect head (p. 441). They are very shy, and *kick with their* hind-feet, turning their head round perpetually, as if about to gore their riders (p. 443).

Our broad-footed *Yak Ox* is the beast with the thick, silky, white fringe under the body, and the bushy tail, both of which sweep the ground; . . . as the steepness increased, these poor animals began to moan, or rather grunt, in the most melancholy manner, and this unearthly music gradually rose to such a violent rattle, that driven rather by its irksome sound than by the discomfort of our saddleless seat, we dismounted at the end of the first half-hour (p. 443).

The *Yak* or *Chauri Gau* inhabits all the loftiest plateaux of High Asia, between the Altai and the Himalaya, the Belut Jag and the Peling mountains, and is found tame as well as wild. It cannot live on the south side of the Himalaya beyond the immediate vicinity of the snows, where the tribes of the Cachars or Juxtaneivean regions of the sub-Himalayas rear large herds of it, and cross-breeds with the Common Ox. They rut in winter, and produce young in autumn. Cæcum simple, not sacked nor banded, 4 inches long; ribs fourteen or fifteen pair; true dorsal ridge confined to the withers; dewlap none.—*Hodgson.*

## 7. OVIBOS.

Nose ovine, hairy, without any naked muffle; inner edge of the nostril with a bald margin. Horns of the male very broad at the base, nearly united together, tapering, pressed downwards



against the sides of the head, and bent up at the tips; of the female subcylindrical, curved, far apart on the sides of the forehead. Tail rudimentary, very short, entirely hidden by the fur of the haunches. Hoofs broad; apices inflexed. *Skull*: the intermaxillaries short, not reaching the nasal; a small depression in front of the orbit, but no fissure; the grinders are without supplemental lobes. The tail very short, not produced beyond the edge of the pelvis; caudal vertebra thin, flattened, expanded. *Skull*, t. 5. f. 1, 2.

N. America.

Ovibos, *Blainville, Bull. Soc. Philom.* 1816, 76 (character); *Desm. Mam.* 492. 181; *H. Smith, Griffith A. K.* v. 182; *Gray, List Mam. B. M.*; *Sundevall, Pecora*, 79; *Turner, Proc. Zool. Soc.* 1849.

Bos, § 3 (Farren, part.), *Wagner*!

# 1. OVIBOS MOSCHATUS. The MUSK OX.

*Bos moschatus*, *Zimm. Geog. Zool.* ii. 86; *Herm. Naturforsch.* xix. t. 5; *Schreb.* v. t. 202 a, b; *Blumb. Hand.* 122; *Donnd. Beytr. Zool.* 697; *E. Sabine, Parry's First Voy. Supp.* t. 189; *J. Sabine, Franklin Journ.* 668; *Richardson, Parry's Second Voy. App.* 331; *Gmelin, S. N.* i. 205; *Shaw, Zool.* ii. 407. t. 11; *Cuv. Dict. Sci. Nat.* v. 29; *Règ. Anim.* i. 271; *Oss. Foss.* iv. 133. t. 10; *Desmoul. Dict. Class. H. N.* ii. 367.

*Bos grunniens*, *O. Fab. Faun. Græc.* 28.

Amerikanischer Bisam Ochse, *Pallas, Nord Beytr.* i. 340; *Nov. Comm. Petrop.* xviii. 601.

*Bisam Ochse*, *Herm. Naturf.* xiv. 91. t. 5, head.

Bœuf Musque, *Jeremie, Voy. au Nord*, iii. 314; *Charlevoix, N. France*, v. 194; *Buffon, H. Nat. Supp.* vi. t. 3; *Pallas, Act. Acad. Sci. Petrop.* 1777, ii. 238.

Musk Ox, *Drage, Voy.* ii. 260; *Dobb's Hudson's Bay*, 19, 25; *Ellis, Voy.* 232; *Pennant, Arctic Zool.* 269. fig.; *Quad.* 131; *Hearne, Journey*, 137; *Parry, First Voy.* 257. t.; *Second Voy.* 497, 503, 512; *Knight, Mus. Anim. Nat.* f. 767.

*Ovibos moschatus*, *Blainville, Bull. Soc. Phil.* 1816; *Desm. N. Dict. H. N.* xxiv. 300; *Mam.* 492; *J. Brookes, Cat. Mus.* 65, 1825; *Gray, List Mam. B. M.* 153; *Cat. Osteol. Spec. B. M.* 55; *Knowsley Menag.* 49; *Richardson, Fauna Bor. Amer.* i. 275.

Musk Bull, *Bewick, Hist. Quad.* 49. fig.

American Ox, *Penn. Syn.* i. 8. t. 2. f. 2, good cop.; *Ency. Méth. t. Hab.* North America. On the Barren Land, in lat. 60° North.

Male, stuffed. N. America. Presented by the Lords of the Admiralty, from Capt. Parry's first Voyage.

Specimen figured *Parry's First Voyage*, t. 189.

**OSTEOLOGY.** Skull, t. 5. f. 1, 2.

*Bos moschatus*, *Cuvier*, *Oss. Foss.* iv. t. 10. f. 15-17, t. 13. f. 3, 8, t. 11. f. 1, 4; *Pallas*, *Nov. Comm. Petrop.* xvii. t. 17; *Schreb. Saugh.* t. 302 B; *Hermann*, *Naturf.* xix. t. 5.

*Bœuf Musque*, *Buffon*, *H. N. Supp.* vi. t. 3.

Skull and horns.

Skull and horns, imperfect.

*Var.* 1. Subfossil. North-west Coast, America.

*Bos Pallasii*, *Dekay*, *Ann. Lyc. N. York*, ii. 6; *Siebel*, *Fauna der Vorwelt*, i. 154.

*Bos canaliculatus*, *Fischer*, *Nouv. Mem. Acad. Nat. Moscou*, 1834, iii. 287; *Oryct. Moscou*, 116.

*Bos moschatus*, *Pallas*, *Nov. Comm. Petrop.* xvii. t. 17; *Ezeretskowsky*, *Mem. Acad. Petersb.* iii. 215. t. 6; *Cuvier*, *Oss. Foss.* iv. 150. t. 3. f. 3, 8, t. 11. f. 1, 4.

*B. moschatus*  $\beta$ . fossilis, *Fischer*, *Syn. Mam.* 494.

## 8. BUDORCAS.

Muzzle hairy, with a small naked muffle only edging the nostrils; ears narrow, pointed. The fur (in summer at least) consists of short, harsh, adpressed hair. The tail is short, very depressed and hairy, like the tail of a goat. The head is large and heavy. The lips taper, and are clad with hair, like sheep. The nostrils are wide and terminal. The horns are round, smooth, lunate; they are nearly in contact on the top of the head; their direction is vertically upwards, then horizontally outwards or to the sides, and then almost as horizontally backwards. The limbs short and straight; the hoofs broad. Skull, t. 5. f. 3, 4.

*Budorcas*, *Hodgson*, *Journ. Asiat. Soc. Bengal*, 1850; *Gray*, *Knowsley Menag.*; *Turner*, *Proc. Zool. Soc.* 1849.

*Nemorhædus*, sp., *Turner*, *Proc. Zool. Soc.* 1849.

Mr. Hodgson observes, "The *Takin* is the nearest ally to the *Gnoos*, but has various points of stronger connection with *Musk Oxen*. Horns are on the highest part of the forehead, as in the *Ox* and *Sheep*, though not, as in them, at the postæal termination of the head, for the encephalon of our animal is spread behind its horns, in the manner of the *Deer* and *Antelopes*, but more restrictedly. The horns are attached, not to the lateral margins of the frontal crest, as in the *Ox*, but to its superior surface, as in the *Antelopes*, *Goats*, and *Sheep*. The horns are nearly in contact on the top of the head, but without actual touching; their direction is vertically upwards, then horizontally outwards or to the sides, then almost as horizontally backwards. Lips are both taper and clad with hair, almost as much as in

the *Goat* and *Sheep*: the animal is consequently a browser and not a grazer. Nevertheless the mere nostrils, which are wide and terminal, have a decided Bovine character both as to form and position, and, as it were to remind us of the true Bovine muzzle, there is a clear broad margin round the nostril which is quite nude and moist."

Mr. Turner (*Proc. Zool. Soc.* 1849) thinks "this genus is closely allied to *Nemorhædus*, and has no relationship with the *Gnu* or the *Musk Ox*;" indeed he appears to consider it as a species of that genus!

Mr. Blyth "believes its affinity to be strictly *Caprine*, with little relation either to the *Bovine* or to the *Gnous* (*Catoblepas*), notwithstanding the very remarkable form of the horns."—*Journ. Asiat. Soc. Bengal*, 1850, 348.

# 1. BUDORCAS TAXICOLA. The TAKIN.

Yellowish grey. Hairs yellow, black tipped. The head, neck, dorsal streak, belly, limbs and tail black; they are sometimes entirely black.

*Budorcas taxicola* (Takin), *Hodgson, Journ. Asiat. Soc. Bengal*, 1850, 65. t. 1; *Gray, Knowsley Menagerie*.

*Nemorhædus* (*taxicola*), *Turner, Proc. Zool. Soc.* 1849.

*Hab.* Eastern Himalaya. The Mishmi Mountains. Called *Takin* by the Mishmis, and *Ken* by the Khamtis.

Female. *Mus. Asiat. Soc. Calcutta*.

OSTEOL. *Hodgson, l. c.* t. 2, skull, copied, t. 5. f. 3, 4.

Subtribe II. *Antilopeæ*. The horns conical, bent back, cylindrical or compressed, and ringed at the base. The knee (or wrist) in the middle of the fore-leg.

"Occipital plane of skull forming an obtuse angle with the frontal plane. Core of the horns thin, consisting of dense bone, often with a clear sinus at the base within. Horns seated on the upper surface, below the crest of the frontals, and apart at the base. Teats 2 or 4. Feet-pits in hind feet, and generally also in the fore ones."—*Hodgson*.

*Antilopeæ*, *Gray, Ann. & Mag. N. H.* 1847, 230; *Glean. Knows. Menag.*

*Antilopeæ* (gen. *Antilope*), part., *Ovesideæ*, part., *Lesson, Nov. Tab. Reg. Anim.* 175.

*Antilopidæ*, *Tetracerocidæ*, *Rupicapradæ*, et *Damalidæ*, *Brookes, Cat. Mus.* 63. 1828.

*Bovidæ* et *Capridæ*, part., *Ogilby, P. Z. S.* 1836, 137.

*Antilope?*, *Gazella?*, *Dryxis?*, *Bubalis?*, *Enagrus, Rafinesque, Anal. Nat.* 56. 1815.

Antilope, *Pallas, Spicil.* i. 1, 1767; *Zoogr. Rosso-Asiat.* i. 249.

Sylvicaprina, Bovina, Antilopina, et Caprina, part., *Sundevall, Pecora*, 51.

Antelopes, *Gray, Proc. Zool. Soc.* 1850, 111.

Cerophorus, sp., *Blainv. Bull. Soc. Phil.* 1816.

The Antelopes have been divided into various subgenera by different authors.

Lichtenstein, "Die Gattung Antilope," divides the genus into four tribes. 1. Bubalides. 2. Connorchætes. 3. Antilopæ Genuinæ. 4. Gazellæ.—*Berl. Mag.* 1814, vi. p. 153.

De Blainville divides the genus *Cerophorus* thus:—1. Antilope. 2. Gazella. 3. Cervicapra. 4. Alcelaphus. 5. Tragelaphus. 6. Boselaphus. 7. Oryx. 8. Rupicapra.—*Bull. Soc. Philom.* 1816, 175.

M. Desmarest, in his *Species of Mammalia*, adopted M. De Blainville's arrangement, separating *Oreas* from *Boselaphus*, and *Antilocapra* from *Rupicapra*.—*Mamm.* 4to, 1820.

Fischer, in his *Synopsis Mammalium*, also follows De Blainville's divisions.—8vo, 1829.

M. Gervais, in his article "Antilope," regards the subgenera of De Blainville as genera, and uses the divisions of H. Smith and Ogilby to divide them into sections. It appears to be a mere compilation, thus:—1. *Antilope*. 2. *Gazella*. 3. *Cervicapra*. a. *Dama*. b. *Redunca*. c. *Tragulus*. d. *Raphicerus*. e. *Tetracerus*. f. *Cephalophus*. g. *Neotragus*. h. *Nemorhedus*. i. *Kemas*. 4. *Rupicapra*. a. *Capricornis*. b. *Dicranocerus*. c. *Rupicapra*. d. *Pantholops*. e. *Antilocapra*. f. *Anoa*. 5. *Oryx*. a. *Ægocerus*. b. *Oryx*. 6. *Alcelaphus*. 7. *Tragelaphus*. 8. *Boselaphus*.—*Supp. N. Dict. Sci. Nat.* i. 260, 1840.

Colonel Hamilton Smith, in *Griffith A. K.* v., divides the *Antelopes* of Pallas into three genera:—

I. ANTILOPE. Subdivided into—1. *Dicranocerus*. 2. *Ægocerus*. 3. *Oryx*. 4. *Gazella*. 5. *Antilope*. 6. *Redunca*. 7. *Tragulus*. 8. *Raphicerus*. 9. *Tetracerus*. 10. *Cephalophus*. 11. *Neotragus*. 12. *Tragelaphus*. 13. *Nemorhedus*. 14. *Rupicapra*. 15. *Aplocerus*. 16. *Anoa*.

II. DAMALIS. Divided into—1. *Acronotus*. 2. *Boselaphus*. 3. *Strepsiceros*. 4. *Portax*.

III. CATOBLEPAS.—Translated in Fischer, *Synopsis Mammalia*, ii. 623, and in Lesson, *Complet. Buffon*, x. 278, 300, 314, 1836.

Mr. Ogilby ("On the Generic Character of Ruminants") divides them into two families, on the form of the muzzle:—

I. CAPRIDÆ. 1. *Mazama* (*furcifer*). 2. *Madoqua* (*Saltiana*). 3. *Antilope* (*cervicapra*). 4. *Gazella* (*dorcas*).

II. BOVIDÆ. 1. *Tragulus* (*pygmeus*). 2. *Sylvicapra* (*mergens*). 3. *Tragelaphus* (*picta*). 4. *Calliope* (*strepsiceros*). 5. *Kemas* (*goral*). 6. *Capricornis* (*Thâr*). 7. *Bubalus* (*mauritanicus*). 8. *Oryx* (*capensis*).—*Proc. Zool. Soc.* 1836, 131.

Professor Carl Sundevall ("On the Pecora of Linnæus," in Swedish, in *Kongl. Vetén. Akad. Handl.* 1844, published separately in German in 1848) divides the Antelopes into four families, according to the form of the hoofs.

I. CAPRINÆ. 1. *Nemorhedus*. 2. *Oreotragus*.

II. ANTILOPINA. 1. *Antilopæ Gazellæ*. 2. *Dicranoceras*. 3. *Bubalus*.

III. BOVINA. 1. *Oryx*. 2. *Catoblepas*. 3. *Anoa*. 4. *Portax*. 5. *Damalis*.

IV. SYLVICAPRINA. 1. *Hippotragus*. 2. *Strepsiceros*. 3. *Cervicapra*. 4. *Calotragus*. 5. *Nanotragus*. 6. *Neotragus*. 7. *Sylvicapra*. 8. *Tragelaphus*. 9. *Tetraceras*.

Rafinesque names, but does not define, the following genera, which appear to belong to this tribe: *Antilope*, *Gazella*, *Strepsiceros*, *Dryxis*, *Addax*, *Bubalis*, and *Enagrus*.—*Anal. Nat.* 56, 1815.

In the *Annals and Magazine of Natural History* for 1847, *Gleanings of Knowsley Menagerie*, vol. ii. 1850, and *Proc. Zool. Soc.* 1851, 111, I proposed to divide them as they are arranged in this work.

#### SYNOPSIS OF THE GENERA OF ANTILOPÆ.

I. *Nostrils bald within.* Antelopes of the Fields.

A. *Body light, elegant. Limbs slender. Hoofs small. Tail short, or moderate, covered with elongated hairs at the base. Horns lyrate or conical, placed over the eye-brows. True Antelopes.*

a. *Horns moderate, lyrate. Nose ovine, hairy.*

\* *Nose very high; nose-hole of skull very large.*

1. SAIGA. *Nose very high, compressed, truncated. Horns white, lyrate.*

**\*\* Nose conical, tapering. Horns black.**

2. **PANTHOLOPS.** Horns elongate, compressed, sublyrate. Nose of male with a dilatation on each side; nose-hole large.
3. **PROCAPRA.** Horns moderate, lyrate. Females hornless. Crumen none. Nose-hole large.
4. **GAZELLA.** Horns moderate, lyrate. Females horned. Crumen distinct.
5. **TRAGOPS.** Horns moderate, lyrate. Females horned. Crumen none. Back simple.
6. **ANTIDORCAS.** Horns moderate, lyrate. Females horned. Crumen small. Back with expansile white streak.
7. **ÆPYCEROS.** Horns elongate, wide, spreading, lyrate. Pattern with tuft of black hair.
8. **ANTILOPE.** Horns elongate, erect, subspiral. Crumen large.

*b. Horns small, slender, straight, conical.*

**† Crumen large. Muffle generally large.**

9. **TETRACERUS.** Horns 2 pair. Muffle large. Crumen longitudinal. Females hornless.
10. **CALLOTRAGUS.** Horns 2, subulate. Muffle large. Crumen arched. Hoofs triangular; knees not tufted.
11. **SCOPOPHORUS.** Horns 2, subulate. Muffle large. Crumen transverse. Knees largely tufted.
12. **OREOTRAGUS.** Horns 2, subulate. Muffle large. Crumen transverse. Hoofs square, high, contracted.
13. **NESOTRAGUS.** Horns 2, subulate. Muffle large. Crumen large. Tail very short.

**†† Crumen large. Nose ovine. Muffle none.**

14. **NEOTRAGUS.** Crown crested.

**††† Crumen a glandular line on side of face. Muffle large.**

15. **CEPHALOPHUS.** Crown crested.

**†††† Crumen none. Muffle large. Crown not crested.**

16. **NANOTRAGUS.** Horns very short, erect. Nose tapering.

17. **PELEA.** Horns conical, slender, erect. Nose swollen.
18. **ELÉOTRAGUS.** Horns conical, diverging, bent forward at the tip. Nose tapering.
- b. *Body large, rather heavy. Limbs slender, strong. Tail elongate, cylindrical at the base, and with longer hair at the end, often forming a compressed ridge. Muffle cervine. Cervine Antelopes.*
- a. *Neck not maned.*
19. **ADENOTA.** Horns sublyrate, tip rather recurved. Hair of back whorled.
- b. *Neck maned on the sides.*
20. **KOBUS.** Horns elongate, sublyrate.
- c. *Nape with a linear, central, compressed, recurved mane.*
21. **AIGOCERUS.** Horns moderate, recurved.
22. **ORYX.** Horns elongate, straight, or slightly recurved.
- d. *Neck simple. Throat slightly maned.*
23. **ADDAX.** Horns elongate, slender, subspiral.
- c. *Body heavy. Legs strong. Hoofs and false hoofs large. Tail very short, flat, hairy above. Horns conical, recurved. Goat-like Antelopes.*
- a. *Nose cervine. Muffle moderate. Horns short, conical.*
24. **CAPRICORNIS.**
- b. *Nose ovine, hairy.*
25. **NEMORHEDUS.** Horns short, conical, recurved. Crumen distinct.
26. **MAZAMA.** Horns short, conical, recurved. Crumen none.
27. **RUPICAPRA.** Horns slender, erect, bent forward at the tip.
28. **ANTILOCAPRA.** Horns compressed, with a process in front, conical, and recurved at the tip.

II. *Nostrils bearded within, beneath, operculated, far apart. Horns on frontal ridge. Legs rather stout. Tail elongate.* The Antelopes of the Desert.

D. *Muzzle very depressed, spongy and bristly.* The Equine Antelopes.

29. CATOBLEPAS. *Horns bent down on the sides, recurved at the tip. Nose with crest of recurved hair. Chest maned.*

30. GORGON. *Horns like former. Nose smooth. Chest not maned.*

E. *Muzzle moderately broad, with a small moist muffle.* Bovine Antelopes.

31. BOSELAPHUS. *Horns on upper edge of frontal bone, suddenly curved back.*

32. DAMALIS. *Horns on front of frontal bone, regularly lyrate.*

"The genera of the *Antilopeæ* being more numerous are worthy of a more minute examination, considering as I do that it is important to divide these numerous genera into natural groups, more especially as there appears to be a character afforded by the nostrils which has been hitherto overlooked, and which separates them into two very distinct and easily recognised sections. This character shows the real position of the *Gnu*, and at the same time proves that Colonel Hamilton Smith was correct in forming his genus *Damalis*, though he did not discover the character by which it was best to be defined, and hence placed with it some species that were not truly allied to it; and it leaves the other Antelopes easily reducible into small groups."—Gray, *Ann. & Mag. N. H.* 1849, 231.

1. Antelopes of the Fields. *Nostrils bald within.*

Antelope of the Fields, *A. campestris*, Gray, *Ann. & Mag. N. H.* 1847, 231; *Knowsley Menag.*; *Proc. Zool. Soc.* 1850, 111.

A. The True Antelopes. *Body light. Limbs slender. Hoof small. Tail short or moderately elongate, and covered with elongated hairs to the base. Horns lyrate or conical.*

True Antelopes (*Antilopeæ veræ*), Gray, *Ann. & Mag. N. H.* 1847, 231; *Knowsley Menag.*; *Proc. Zool. Soc.* 1850, 111. *Antilopina*, part., *Sundevall*, *Pecora*.



a. *Horns lyrate, (or rarely cylindrical subspiral,) strongly ringed at the base. Nose ovine, without any naked muffle; inguinal pores deep. Crumen generally distinct.*

a. *Nose high, compressed; nose-hole of skull very large.*

### 1. SAIGA.

Horns short, strong, lyrate, annulated, white. Nose compressed, very high, rounded. Nostrils very close together. Crumen distinct. Fur soft. *Skull*: nose-opening very large, extended back to over the eyes, t. 6. f. 1. 2.—*Pallas, Spic. Zool.* xii. t. 3. f. 9, 10.

*Saiga*, Gray, *Ann. & Mag. N. H.* 1847, 231; *Glean. Knows. Menag.* 3; *Proc. Zool. Soc.* 1850, 112.

*Antilope (Gazellæ)*, sp., *Licht. Berl. Mag.* vi. 172, 1814; *Sundevall, Pecora*, 86.

*Cerophorus (Antilope vera)*, sp., *Blainv. Bull. Soc. Phil.* 1816, 75.

*Antilope (vera)*, *H. Smith, G. A. K.* v. 1827; *Gervais, Supp. N. D. Sci. Nat.* i. 260.

*Gazella*, sp., *Turner, P. Z. S.* 1849.

*Colus*, "*Wagner*."

Mr. Turner observes, "This genus (*Gazella*) seems prone to exhibit in certain species inhabiting more temperate regions, enlargements of, or appendages to, the respiratory passages; for example, the enlarged larynx of *G. gutturosa*, the elevated nose of *G. Colus*, and the appendages to its sides in the *Chiru* (*G. Kemas*); these seem to be physiological adaptations, in no case marking a group, and therefore insufficient to warrant generic distinction, which has been made in the two latter instances. However, not having as yet seen entire skulls of these species, I retain them provisionally in this genus, judging by the horns. I think few naturalists will set forth, with Mr. Gray, the colour of the horns of the *Saiga* as a generic character." If Mr. Turner had consulted Pallas's description and figure of the skull of the *Saiga*, or Hodgson's figure of the skull of the *Chiru*, I think he would have been satisfied they were good genera.

### 1. SAIGA TARTARICA. The COLUS and SAIGA.

Pale yellowish; crown and back greyish washed. Young: crown greyer.

*Antilope Saiga*, *Pallas, Misc.* 6; *Spic.* xii. 14. 21. t. 1, t. 3. f. 6, 9, 10, 11; *Zool. Ross. Asiat.* i. 252; *Gmelin, S. N.* i. 185.

A. (*Gazella*) *Saiga*, *Licht. Berl. Mag.* vi. 172; *Schreb. Saughth.* 1216. t. 276; *Desm. Mam.* 452; *E. M.* t. 52. f. 1; *Fischer, Syn.* 458.

- A. (vera) Saiga, *Blainv. B. S. Phil.* 1816, 75.  
 Antelope Scythica, *Pallas, Spic.* i. 9; *Penn. Quad.* 86.  
*Capra Tatarica, Linn. S. N.* i. 97, from *Aldrov.*  
*Capra Sayga, Forster, Phil. Trans.* lvii. 344; *G. G. Gmelin, Nov. Comm. Petrop.* xiv. 512.  
 A. (Antilopa) Colus, *H. Smith, G. A. K.* v. 829.  
*Saiga Tartarica, Gray, List Mam. B. M.* 160; *Cat. Osteol. Spec. B. M.* 55; *Knowsley Menag.* ii. 3; *Proc. Zool. Soc.* 1850, 112.  
*Saiga Colus, Gray, Ann. & Mag. N. H.* 1847, xviii. 231.  
*Colus Tartarica, Wagner.*  
*Gazella Colus, Turner, Proc. Zool. Soc.* 1849.  
*Colus, Strabo, Geog.* vii.  
*Colus Strabonis, Gesner, Quad.* 893; *Jonst. Quad.* t. 27.  
*Suhac, Aldrov. Bisulc.* 763; *Rzacz. Polon.* 224.  
*Ibex imberbis, J. G. Gmelin, Nov. Comm. Petrop.* v. 345; *Summ.* vii. 39. t. 19.  
*Saiga, J. G. Gmelin, Sibir.* i. 212; *Buffon, H. N.* xii. 198. t. 22. f. 2, horns; *Shaw, Zool.* ii. 339.  
*Saigaki, S. G. Gmelin, Reis.* ii. 174. t. 12.  
 Scythian Antelope, *Penn. Syn.* 35; *Quad.* i. 98.  
 Margatsch, *Russians.*  
*Hab. Siberia.*

Adult male. Siberia. Mr. Brandt's Collection.

Young ——. Siberia. Mr. Brandt's Collection.

ANAT., t. 6. f. 1, 2. *Pallas, Spicil. Zool.* xii. 41. t. 3. f. 9 & 10, skull, f. 6, 11, stomach; *Daub. in Buffon H. N.* xii. t. 22. f. 2.

Horns, separate. Russia.

Two horns, separate.

†† Nose appendaged. Nose-hole of skull rather large.

## 2. PANTHOLOPS.

Horns elongate, lyrate. Nose (of the males?) with a dilated pouch on each side. Crumen distinct. Hair close, erect, spreading. Skull: nose-hole large. *Females* hornless, t. 6. f. 3, 4.

*Kemas, Gray, Ann. & Mag. N. H.* 1847, 231; *Knowsley Menag.* 3; *Proc. Zool. Soc.* 1850; not *Ogilby.*

*Pantholops, Hodgson, Journ. Asiat. Soc. Bengal,* xi. 282; *Wagner. Antilope (Gazellæ), sp., Sundevall, Pecora,* 86.

*Oryx, sp., H. Smith, G. A. K.; Fischer, Syn.* 624; *Lesson, Comp. Buffon,* x. 283.

*Cervicapra a. Pantholops, Gervais, Supp. D. S. N.* i. 264.

*Gazella, sp., Turner, P. Z. S.* 1849.

1. **PANTHOLOPS HODGSONII.** The CHIRU.

Pale brown; chest and inside of the limbs white; front of face and front of fore-legs blackish.

Antelope Hodgsoni, *Abel, Edin. Journ. Sci.* 1827, 163; *Férussac, Bull.* xv. 141; *Fischer, Syn.* 462; *Hodgson, P. Z. Soc.* 1831, i. 52; 1832, ii. 15; 1833, 110; 1834, 80; 1835, 3; 1836, 39.

Antelope Chiru, *Lesson, Man. Mamm.* 371; *Comp. Buffon*, x. 285.

Antelope (Oryx) Kemas, *H. Smith, Griff. A. K.* iv. 197. t., v. 819.

A. Komas, *Lesson, Comp. Buffon*, x. 285.

Chirsu, *Ann. Philos.* 40. n. 59.

Kemas Hodgsonii, *Gray, Ann. & Mag. N. H.* 1847, xviii. 231; *List Mam. B. M.* 157; *Cat. Osteol. Sp. B. M.* 55; *Cat. Hodgson Coll. B. M.* 26; *Knowsley Menag.* 3; *Proc. Zool. Soc.* 1850, 112.

Pantholops Hodgsonii, *Hodgson, J. A. S. Beng.* xi. 282; *Calcutta Journ. N. H.* iv. 290.

Gazella Kemas, *Turner, P. Z. S.* 1849.

The Chiru, *Hodgson, J. A. S. Beng.* 1832, i. 59. t. 340; 1834, iii. 134, x. 913.

*Hab.* Thibet.

Male. Thibet. Presented by B. H. Hodgson, Esq.

**OSTEOLOGY**, t. 6. f. 3, 4. *Hodgson, J. Asiat. Soc. Beng.*

Horns, separate. Himalaya. Presented by Major Honeywood.

Skull of male, with horns. Presented by B. H. Hodgson, Esq.

A single slender horn. Presented by B. H. Hodgson, Esq.

Skull of male, with horns. Nepal. Presented by B. H. Hodgson, Esq.

**DRAWINGS.**

Drawing of male and female, t. 146. Lithograph proof by Mr. F. Howard, t. 147.

Drawing of male and female, t. 148.

Drawing of male without inguinal gland, t. 149.

Drawing of horns, t. 150.

Drawing of skull and details of head, t. 151.

Drawing of skull of male, t. 186. f. 7, 8.

The *Chiru* inhabits the open plains of Thibet. They are gregarious, rutting in winter, gestating six months, having one at a birth in summer. They are very pugnacious and jealous, and in their contests often break off one of their long horns, hence the rumour of Unicorns in Thibet.—*Hodgson, l. c.* 12; *Journ. Asiat. Soc.* nos. 2 & 27.

††† *Nose tapering. Nose-hole of skull moderate.*

### 3. PROCAPRA.

Horns lyrate, strong, black. Tail tapering. Nose simple, ovine. Muffle none. Crumen none. Feet with small feet-pits. Post-corneal sinus large. Inguinal pores none. Hair elongated, especially above the head and neck; knees not tufted. *Females* hornless. Teats 2. Skull with rather large nose-hole; no suborbital pits, but very large slits. Intermaxillary rather short, not reaching to the small nasal bone, t. 7. f. 2.

*Procapra*, Hodgson, *Journ. Asiat. Soc.* n. 173; on *Var. Gen. Ruminants*, 13, 1847.

Inhab. ravines in open plains of Thibet, in small herds or families.

#### 1. PROCAPRA GUTTUROSA. The DSEREN.

Pale yellowish; hair long, soft.

*Antilope gutturosa*, Pallas, *Spic.* vii. 14, 49. t. 2, t. 3. f. 14-17; *Licht. Berl. Mag.* vi. 171; *Desm. Mam.* 452 (*E. M.* t. 52. f. 4); *Fischer, Syn.* 488. 627; *H. Smith, G. A. K.* v. 830.

A. (*Gazella*) *gutturosa*, Gmelin, *S. N.* i. 186; *Schreb. Saughth.* 1221. t. 275.

A. (*vera*) *gutturosa*, Blainv. *B. S. Phil.* 1816, 7; *Gervais, l. c.* 260.

*Gazella gutturosa*, Gray, *Ann. & Mag. N. H.* xviii. 231; *List Osteol. Spec. B. M.* 56; *Knowsley Menag.* 3.

*Procapra gutturosa*, Gray, *Proc. Zool. Soc.* 1850, 115.

*Antilope orientalis*, Erx1. *Syst.* 288.

*Antilope*, Bellon. i. 311.

*Capra gutturosa a*, Messerschm. *Mus. Petrop.* i. 356.

*Capra campestris gutturosa*, J. G. Gmelin, *Nov. Comm. Petrop.* v. 347. t. 9, 10.

*Capra flava*, Du Halde *Gesch. v. China*, ii. 280.

Tzeeran Dscheren, Buff. *H. N. Supp.* vi. 170.

Chinese Antelope, Penn. *Syn.* 35; *Quad.* i. 96; *Shaw, Zool.* ii. 342.

*Hab.* Mongolia. Siberia. Thibet.

Male and female, stuffed. Thibet.

ANAT. Pallas, *Spic. Zool.* xii. 52. t. 3. f. 13, horns; f. 14, stomach; f. 15, —; f. 16, 17, larynx.

Skull, female. Siberia. From Mr. Brandt's Collection.

2. *PROCAPRA PICTICAUDA*. The RAGOA OF GOA.

Hair sordid brown, with rufous tips. Underside, inside of the ears and limbs, and anal disk white. Tail black.

*Procapra picticauda*; Hodgson, *Journ. Asiat. Soc. Calc.* 1846, (n. 173) 384; *Icon. ined. Brit. Mus.*; Gray, *Knowsley Menag.*; *Proc. Zool. Soc.* 1850, 116.

*Hab.* Thibet. B. H. Hodgson.

Perhaps the same as the former in summer coat.

## OSTEOLOGY, t. 7. f. 2.

Three skulls, male. Thibet. Presented by B. H. Hodgson, Esq.

4. *GAZELLA*.

Horns lyrate, strong, black. Face tapering. Nose simple. Crumen distinct. Fur short, close-pressed. Females with smaller horns. Teats 4. Skull with a suborbital fissure, and a moderate, or very slight fossa, suddenly pressed in before the orbit; the masseteric ridge rising before the orbit; the auditory bulla large and prominent; the basioccipital bone having its tubercles but little or not developed; the median incisors expanded at their summits; the molars without supplemental lobes, t. 6. f. 5.

*Gazella*, sect. 2, Gray, *Ann. & Mag.* N. H. 1847, 231; *Knowsley Menag.* 3.

*Gazella*, Gray, *Proc. Zool. Soc.* 1850.

*Gazella*, sp., *Bhainv. Bull. Soc. Phil.* 1816, 75; *Ogilby*, P. Z. S. 1836, 137; *Gervais*, *Supp. D. S. N.* i. 260; *H. Smith*, *Griffith A. K.* v. 182; *Fischer*, *Syn.* 624.

*Antilope Gazella*, sp., *Licht. Berl. Mag.* vi. 171.

*Antilope Gazellæ* (typicæ), *Sundevall, Pecora*, 85.

*Antilope vera*, sp., *Blainv. Bull. Soc. Phil.* 1816, 75; *Gervais*, *Supp. D. S. N.* i. 260.

*Cervicapra*, a. *Dama*, *Gervais*, *Supp. Dict. Sci. Nat.* i. 261, 1840.

\* *Knee with tufts. Back and rump brown. Vent white.*

† *Lower part of the sides with a dark oblique streak. Feet with a tuft of black hair.*

1. *GAZELLA DORCAS*. The GAZELLE.

Fur rather elongate and harsh, grey brown. Outside of fore-legs broad, oblique streak along the side. Edge of anal disk; front of face, and face-streak dark brown. Face-streak, throat, chest, belly, insides of thighs, and anal disk, white. Tuft at

underside of feet and end of tail black. Knee-tufts blackish. Young: back and side-streak rather paler.

Antilope Dorcas, *Pallas, Spic.* i. 11, xii. 15.

A. (vera) Dorcas, *Licht. Berl. Mag.* vi. 168; *Berlin Akad.* 1824, 231. t. 5; *Saugh.* t. 5; *Schreb. Saugh.* 1193. t. 269; *Gmelin, S. N.* i. 187 (*E. M.* t. 53. f. 2).

A. Gazella Dorcas, *Blainv. B. S. Phil.* 1816, 75; *H. Smith, G. A. K.* v. 825; *Fischer, Syn.* 459. 628; *Desm. Mam.* 453.

Antilope Gazella, *Pallas, Misc.* 7.

Capra Dorcas, *Linn. S. N.* i. 96.

Gazella Dorcas, *Ogilby, P. Z. S.* 1836, 137; *Gray, List Mam. B. M.* 160; *Cat. Osteol. Spec.* 56; *Knowsley Menag.* ii. 4. t.; *Proc. Zool. Soc.* 1850, 112; *Turner, P. Z. S.* 1849.

Algazel ex Africa, *Hernand. Mex.* 893. fig.

Gazella Africana, &c., *Raii Syn.* 80; *Brisson, R. A.* 69.

#### FEM.

Antilope Corinna, *Pallas, Misc.* 7; *Spic. Zool.* i. 12, xii. 16; *Gmelin, S. N.* i. 188; *Schreb.* t. 271.

A. Gazella Corinna, *Blainv. B. S. Phil.* 1816, 75; *H. Smith, G. A. K.* v. 333.

Antilope Dorcas ♀, *Fischer, Syn.* 259. 628.

Corinne, *Buff. H. N.* xii. 261. t. 27, t. 31. f. 3, 4, horns (not *F. Cuvier*); *Cuvier, Menag. Mus.* t.

Corine, *Adanson.*

Spotted Antelope, *Penn. Syn.* 37.

Corine Antelope, *Penn. Quad.* i. 101; *Shaw, Zool.* ii. 193. t. 194.

#### JUN.

Antilope Kevella, *Pallas, Misc.* i. 7; *Spic.* i. 12, xii. 15; *Gmelin, S. N.* i. 187.

A. Gazella Kevella, *Blainv. B. S. P.* 1816, 75; *H. Smith, G. A. K.* v. 322.

A. Dorcas jun., *Fischer, Syn.* 260. f. 28.

Kevel, *Buffon, H. N.* xii. 204. 258. t. 26, t. 31. f. 2; not *F. Cuvier.*

Flat-horned Antelope, *Penn. Syn.* 34; *Quad.* i. 92; *Shaw, Zool.* ii. 351. t. 194.

#### Var. 1.

Antilope Arabica, *Hempr. & Ehrenb. Symb. Phys.* t. 5; *Licht. Saugh.* t. 6; *Fischer, Syn.* 460.

Antilope Dorcas var., *Rüppell.*

Antilope Gazella Cora, *H. Smith, G. A. K.* v. 338.

A. Dorcas var. Cora, *Fischer, Syst.* 628.

A. Dorcas var., *Rüppell.*

Female. Shores of the Red Sea. Presented by Edward Cross, Esq.

Male. Shores of the Red Sea?

Male. Shores of the Red Sea?

Male, rather small. Shores of the Red Sea? Presented by the Earl of Derby.

Male, adult. Egypt. Presented by Sir John G. Wilkinson.

Male, young, horns short. Egypt.

Female. Egypt. Presented by James Burton, jun., Esq.

Three young kids. Egypt.

Male, adult. Presented by the Earl of Derby.

Male. Presented by the Earl of Derby.

Female, young. Presented by W. Tyler, Esq.

Var. 2. Nose with a dark spot or streak.

Var. 3. Larger. Legs thicker.

G. Dorcas Cuvieri, *Gray, Knowsley Menag.* t. 3. f. 2.

Antilope Cuvieri, *Ogilby; Frazer, Zool. Typica.* t.

Kevel Gris, *F. Cuv. Mam. Lithog.* t. 3.

*Hab.* Mogadore.

Var. 4. Horns elongate.

Antilope leptoceros, *F. Cuvier, Mam. Lith.* t. 8 ♀.

*Hab.* Senaar.

OSTEOLOGY, t. 6. f. 5.

Gazelle, *Daub. Buff. H. N.* xii. t. 25. t. 31. f. 1?

Kevel, *Daub. Buff. H. N.* xii. t. 31. f. 2?

Corinne, *Daub. Buff. H. N.* xii. t. 30. t. 31. f. 4?

Skull of female. North Africa. Presented by Sir John Gardner Wilkinson.

Four pair. Horns of males. N. Africa.

Two. Single horn of males. N. Africa.

Three pair. Horns of females. N. Africa.

Bones of the body.

Skull.

Skull. India. From Capt. Boys' Collection.

Skeleton. India. From the Zoological Society.

†† *Upper part of the sides with a pale streak.*

### 3. GAZELLA ISABELLA. The ISABELLA GAZELLE.

Fur short, very soft, pale yellowish brown, with a broad, rather paler oblique streak on the upper part of the side. Knee-tuft, front of face, and lower face-streak, darker yellow-brown; upper face-streak, chest, hinder edge of tarsus, underside of feet, inside

of limbs, belly and vent, white. Tail black. Female: horns very slender, longer than the head. Young paler, the lower part of the sides rather darker.

*Gazella Isabella*, Gray, *Ann. & Mag. N. H.* 1846; *Ann. & Mag. N. H.* xviii. 331; *Knowsley Menag.* ii. 4; *Proc. Zool. Soc.* 1850.

A. Isidis (Die Isis Antelope), *Licht. Darstel.*

A. Dorcas, *Licht. Darstel.* t. 5.

A. Dorcas var. *a*, *Sundevall, Pecora*, 83.

*Hab.* N. Africa. Egypt. Kordofan.

Male. Abyssinia.

Female? Kordofan. From Mr. Parrey's Collection.

Two females: "Antilope montana," *Parrey's MSS.*; "Antilope megalotis," *Parrey's MSS.* Kordofan.

#### OSTEOLOGY.

A skull. Abyssinia.

This species is easily known from the foregoing by the softness and fineness of the fur, and the lower side-streak being of the same colour as the back, and from it and the following by having no dark edge to the anal disk.

#### 4. GAZELLA SUBGUTTUROSA. The JAIROU.

Pale brown; upper part of sides with a broad, rather paler streak. Crown and knee-tuft greyer. Face-streak indistinct. Nose, lower part of sides, belly, hinder side of fore, and front side of hinder limbs, and anal disk, white. Streak on haunches dark brown. End of tail black.

*Antilope subgutturosa*, *Gulderst. Act. Acad. Petrop.* 1778, i. 251. t. 9-12; *Gmelin, S. N.* i. 186; *Schreb. Saugth.* 1196. t. 270 B.

A. *Gazella subgutturosa*, *Licht. Berl. Mag.* vi. 271, 1814; *Blainv. B. S. Phil.* 1816, 75; *Desm. Mam.* 454; *H. Smith, G. A. K.* iv. 210. t. skull, v. 824; *Fischer, Syn.* 460. 629.

*Gazella subgutturosa*, Gray, *List Mam. B. M.* 160; *Ann. & Mag. N. H.* xviii. 1847, 331; *Knowsley Menag.* 4; *P. Z. Soc.* 1850, 113.

A. Dorcas var. *Persica*, *Rüppell.*

*Capra Ahu, Kämpf. Ezol.* 403. fig. 407.

*Daheren, J. G. Gmelin, Sibir.* ii. 103.

*Guldensted's Antelope, Penn. Quad.* i. 97; *Shaw, Zool.* ii. 343.

*Hab.* Siberia? Tartary. Armenia and North Persia.

A female. Siberia. From Mr. Brandt's Collection.



\*\*\* *Knees with tufts (rump-mark and throat-spot white). Side-streak none. Tail slender, compressed, only hairy above.*

Dama, Bennett, *Trans. Zool. Soc.* i.

Cervicapra (Dama), Gervais, *l. c.* 1840.

#### 5. GAZELLA SCÖMMERINGII. The ABYSSINIAN MOHR.

Pale brown. Nose, forehead, lower edge of face-streak, and end of tail, blackish. Chest, belly, angular mark on rump above tail, face-streak, and spot on throat, white. Limbs pale. *Female*: forehead paler in centre.

Antilope Scömmeringii, *Cretaschm. in Rüpp. Zool.* 49. t. 19.

A. Gazella Scömmeringii, *Fischer, Syn.* 462.

Gazella (Dama) Scömmeringii, *Gray, List Mam. B. M.* 161; *Ann. & Mag. N. H.* xviii. 1847, 331; *Knowsley Menag.* 5; *Turner, P. Z. S.* 1849.

*Hab.* Lower Abyssinia. Senaar.

Male, adult, from Abyssinia. From Dr. Rüppell's Collection.

Female. Senaar. From Dr. Rüppell's Collection.

#### 6. GAZELLA MOHR. The MOHR.

Bay. Chin, spot on throat, chest, belly, edge and inside of limbs, and angular spot on rump above the tail, white. Spot on side of face and end of tail black.

Antilope (Dama) Mohr, *Bennett, Trans. Zool. Soc.* i. t. 8; *Knight Mus. Anim. Nat.* f.

Gazella (Dama) Mohr, *Gray, Knowsley Menag.* 5; *Proc. Zool. Soc.* 1850.

Cervicapra (Dama) Mohr, *Gervais, Supp. D. S. N.* i. 261.

Gazella Mohr, *Turner, P. Z. S.* 1850, 114.

*Hab.* West Africa.

Stuffed: not good state. Gambia. Presented by the Earl of Derby.

*Var.?* Bay. Chin, spot on throat, belly, lower part of sides, hinder part of the back, and inside of the limbs, white. No spot on side of the face.

Nangeur, *Buffon, H. N.* xii. t. 32. f. 3. t. 34; *Shaw, Zool.* ii. 359. t. 197.

Antilope Dama, *Pallas, Misc.* 5; *Spic. Zool.* i. 8 (from Nangeur, *Buffon*), xii. 22; *Gmelin, S. N.* i. 183; *Schreb. Saugth.* 1199. t. 264, from *Buffon*.

Gazella Dama, *Gray, Ann. & Mag. N. H.* xviii. 1847, 231.

Antilope (Dama) nangeur, *Bennett, P. Z. S.* 1832, 2.

Antilope rubra, *Afzelius*.

Antelope (Cervicapra) Dama, *Blainv. Bull. Soc. Phil.* 1816, 75.  
 Gazella (Dama) Dama, *Gray, Knowsley Menag.* 5; *Proc. Zool. Soc.* 1850.

Swift Antelope, *Penn. Syn.* 30; *Quad. i.* 84.

*Hab.* West Africa. Senegal. *Buffon.*

Not seen since Buffon's time; perhaps a bad figure of former.

#### OSTEOLOGY.

Nangeur, *Daub. Buff. H. N.* xii. t. 32. f. 3.

#### 7. GAZELLA RUFICOLLIS. The ANDRA.

Whitish. Neck and front part of the middle of the back reddish. Face-streak none.

Antelope (vera) Dama, *Licht. Berl. Mag.* vi. 170; *Berl. Akad. Abh.* 1824, 251. t. 5; *Saugth.* t. 3, 4; *Rüppell, Atlas Zool.* 39. 42. t. 14, 16; *Ehrenb. Symb. Phys.* t. 6.

A. Gazella Dama, *H. Smith, G. A. K.* v. 822.

A. Cervicapra Dama, *Blainv. B. S. Phil.* 1816, 75, part.; *Desm. Mam.* 458; *Fischer, Syn.* 464.

Antelope (Dama) Addra, *Bennett, Proc. Z. S.* 1833, 2.

Antelope ruficollis, *H. Smith, G. A. K.* iv. 205. 355. t.

Gazella ruficollis, *Gray, Ann. & Mag. N. H.* 1847, xviii. 231; *Knowsley Menag.* 5; *Proc. Zool. Soc.* 1850, 114.

Cervicapra (Dama) ruficollis, *Gervais, l. c.* 261.

A. Dama var. orientalis, *Sundevall, Pecora*, 82.

Dama, *Plinii H. N.* viii. 53; *Aldrov. Bisulc.* 729. fig.

Female, stuffed. Kordofan. *Senaar.*

*Var.* or *young?* with an indistinct narrow brown streak across the outside of the thighs, and the forehead iron-grey, with longer hair at the base of the horns. Horns small. *Mus.* Frankfort.

*Hab.* North Africa. Kordofan.

These species differ in size as well as markings. The *Mohr* and *Andra* differ from *G. Sæmmeringii* in being of much larger size, and in wanting the black face and streaks. *Bennett's Mohr* has only an angular white spot on the rump, like *G. Sæmmeringii*; *Buffon's Nangeur* is smaller, and has more white on the rump, thighs and sides; and the *Andra*, which agrees with the figures cited, is almost all white, with a reddish neck and withers.

\*\*\* *Knees without tufts (but with rather longer hair, forming a linear keel in front). Back and rump brown. Sides with dark streak.*

#### 8. GAZELLA RUFIFRONS. The KORIN.

Bay brown; sides above paler, with a broad, dark streak below.

Chest, belly, inside of legs, back edge of tarsus, and underside of feet and anal disk, white. Face bright bay, with a broad white side-streak.

*Adult female*: nose blackish above. *Young* pale yellowish. Side-streak brownish.

*Gazella rufifrons*, Gray, *Ann. & Mag. N. H.* 1846; 1847, xviii. 231; *Knowsley Menag.* 5. t. 4; *Proc. Zool. Soc.* 1850, 115.

*Antilope (Gazella) lævipes*, *Sundevall, Pecora*, 82.

*Kevel* (male), *F. Cuvier, Mam. Lithog.* t. 3; not *Buffon*.

*Corinne*, *F. Cuvier, Mam. Lithog.* t., young and female; not *Buffon*.

*Hab.* W. Africa; Senegal. Gambia, called *Seni*. Senaar (*Sundevall*).

Two males, stuffed. Senegal.

Two females, stuffed. Senegal.

Two young, stuffed.

#### ANAT.

Skull, adult female.

Skull, young.

*Buffon* mentions a *Corine* as coming from Senegal, but he says it is smaller than the *Kevel*, and *Daubenton* says that it has knee-tufts, so that it cannot be this species. Indeed the *Gazelle*, *Corine*, and *Kevel* of *Buffon* are clearly all *A. Dorcas* of this Catalogue.

The *Kevel* figured by M. F. Cuvier well represents this species. He says it was sent from Senegal, and probably it has not knee-tufts, for they are not indicated in the figure, or mentioned in the text; like other descriptions of this author, though it occupies more than two pages, all the peculiarities of the species are left out. The *Corine* of the same author, also from Senegal, well represents the young. M. Cuvier considers the *Kevel* and *Corine* and *A. Dorcas* form one species, but afterwards, under *Kevel gris*, he appears to change his mind and thinks they may be two.

#### 5. TRAGOPS.

Horns lyrate, short, black: in both sexes. Face tapering. Nose ovine. Muffle none. Crumen none. Fur short, adpressed; sides without any dark streak. Knees tufted. Feet with large feet-pits. Inguinal pits distinct. *Female* with slender horns. Teats 2. Head, t. 7. f. 1.

*Hab.* India. Not gregarious.

*Tragops*, *Hodgson, Var. Genera Ruminants*, 1847, 11; *Gray, Proc. Zool. Soc.* 1850.

*Gazella*, sp., Gray, *List Mam. B. M.* 161; *Ann. & Mag. N. H.* 1847, xviii. 231; *Knowsley Menag.*

The *Chikara* are not gregarious. They have lyrate horns, common to both sexes, knee-tuft, line along the flanks, and ovine nose of the Gazelles of Africa, but they are wholly destitute of the eye-pits; they have the large, dark-lusted eyes of the Antelopes, very unlike the small, pale-eyed Goats.—Hodgson.

Mr. Hodgson separates this genus from *Gazella*, because he declares it has no *crumen*; but Mr. Turner, who says he has seen a skull, describes it as being a typical *Gazella*; and Colonel Sykes described the suborbital sinuses as very small, not observable in dried skins, nor does the animal dilate them unless very much alarmed.—*P. Z. S.* 1831, 106.

# 1. TRAGOPS BENNETTII. The CHIKARA or RAVINE DEER.

Bay brown. Knee-tuft, end of nose and tail black. Streak on haunches blackish. Face-streak, chest, belly and inside of limbs white. Feet black or brown.

*Antelope Bennettii*, Sykes, *Proc. Zool. Soc.* 1831, 140; *Hodgson, Journ. Asiat. S. B.* x. 913; *Calcutta Journ. N. H.* iv. 290.

*Gazella Bennettii*, Gray, *Ann. & Mag. N. H.* 1847, xviii. 231; *Knowsley Menag.* 4; *List Mam. B. M.* 161; *Cat. Osteol. Spec. B. M.* 56; *Cat. Hodgson Coll. B. M.* 27; *Turner, P. Z. S.* 1849.

*Antelope Christii*, Gray, *B. M.*

*Antelope Bharatensis*, Hodgson, *Journ. Asiat. S. Beng.* x. 913; *Calcutta Journ. N. H.* iv. 290; *Zool. Nepal, MSS.* t.

*Antelope Hazenna*, I. Geoff. *Voy. Jacq. Mam.* t. 6, bad.

*Antelope Dorcas* var. *c*, Sundevall, *Pecora*, 85.

*Tragops Bennettii*, Hodgson, *Journ. Asiat. Soc. Bengal*, 1847, 11; *Gray, Proc. Zool. Soc.* 1850, 116.

Chouka or Ravine Deer, Hodgson, *J. A. S. Beng.* i. 347 & 913.

The Kalsiepie or Black tail, *Mahrattas*.

Goat Antelope, *Europeans in Deccan*.

*Var.* Feet brown, like back.—Gray, *P. Z. S.* 1850, 116.

*Hab.* India; Madras. Nepal; Tarai.

Male. Plains of the Seramic Country, Madras. Presented by Walter Elliot, Esq.

Male and female. Madras. Presented by Col. Sykes.

Skin of male, with head and horns, very imperfect. Nepal. Presented by B. H. Hodgson, Esq.

*Tragops Bennettii*, Hodgson.

Skin of young male, imperfect. Nepal. Presented by B. H. Hodgson, Esq.

OSTEOLOGY. Head, t. 7. f. 1.

Horns of male. Presented by Dr. Turnbull Christie.

Antelope Christii, Gray, MSS. B.M.

#### DRAWINGS.

Drawing of male and female, t. 156.

The *Chikara* carries its tail erect when in rapid motion.—Sykes.

An albino of this species now living in the Zoological Gardens has white horns.

### 6. ANTIDORCAS.

Horns lyrate, short, black. Face tapering. Nose simple. Crumens moderate, distinct. Back with an expansile white fold or streak. Hair close-pressed. Knees not tufted. Female with small horns. Teats —.

South Africa. Living in large herds, migrating.

Antidorcas, Sundevall, *Pecora*, 87; Gray, *Proc. Zool. Soc.* 1850, 116.

Gazella, sp., Gray, *List Mam. B. M.* 160; *Cat. Osteol. Sp. B. M.*; *Ann. & Mag. N. H.* 1847. xviii. 231; Turner, *Proc. Zool. Soc.* 1849.

Gazella, § 5, *Knowsley Menag.*

#### 1. ANTIDORCAS EUCHORE. The TSEBE or SPRING BOC.

Pale brown. Face, throat, chest, belly, broad expansile streak on back to base of tail, edge and inner side of limbs, white. Face-streak and middle of forehead pale brown. Side-streak oblique, dark brown. Young paler. Side-streak paler. Back-streak distinct.

Antelope Euchore, *Forster in Itin.*; *Sparrm. Act. Holm.* 1780, 275.

A. vera Euchore, *Licht. Berl. Mag.* vi. 169; *Saughth.* t. 7; *Schreb. Saughth.* 1189. t. 272; *Harris, W. Anim. Africa*, t. 3, a head; *Burchell, Trav.* i. 290, ii. 109.

A. Gazella Euchore, *Blainv. B. S. Phil.* 1816, 75; *Desm. Mamm.* 455; *Desm. Dict. Class. H. N.* i. 441. t. . f. 1; *Fischer, Syn.* 461. 629; *H. Smith, G. A. K.* v. 823.

Gazella Euchore, Gray, *List Mam. B. M.* 160; *Cat. Osteol. B. M.* 56; *Knowsley Menag.*; *Turner, P. Z. Soc.* 1849.

Antelope Dorcas, *Gervais, l. c.* 261.

A. Dorcas var. pygargus, *Forster, in MSS.* 62.

Antidorcas Euchore, Gray, *Proc. Zool. Soc.* 1850, 116.

Antelope Marsupialis, *Zimmerm. Geog. Gesch.* 111. 427; *Burchell, Trav.* i. 290.

Antelope pygarga, *Blumenb. Handb.* 119.

- Antilope dorsata, *Lacep. in Buff. ; Burchell, Trav. i. 290.*  
 Antilope saliens, *Lacep. in Buff. ; Burchell, Trav. i. 290.*  
 Antilope saltatrix, *Link, Beytr. 99, from Buffon.*  
 Pronkbock, *Vosmaer. Besch. 1784, t.*  
 Gazelle à bourse, &c., *Allam, Buffon Supp. iv. 142. t. 60.*  
 Gazelle de parade, *Vosmaer.*  
 Gazelle sautante, *Buffon, H. N. Supp. vi. 183. t. 21.*  
 Springer Antelope, *Penn. Quad. i. 94 ; Shaw, Zool. ii. 344. t. 192.*  
 Springbock, *Licht. Reise, i. 525, 564, 580.*  
 Tzebi, *Shaw, Reise, 151.*  
 Gazelle, *Buffon, H. N. xii. 201. t. 23, t. 31. f. 1, skull.*  
 Barbary Antelope, *Penn. Syn. 33. fig. ; Quad. i. 42 ; Shaw, Zool. ii. 350.*  
*Hab. South Africa.*  
 A male, in a bad state. S. Africa. Presented by W. Burchell, Esq., LL.D.  
 A male. S. Africa. From the South African Museum.  
 A male. S. Africa. Presented by the Earl of Derby.  
 A young female. S. Africa.

OSTEOL. *Buffon, H. N. xii. 201. t. 31. f. 1, skull.*

Skull and horns. South Africa. Presented by W. Burchell, Esq., LL.D.

Horns. South Africa.

Horns. South Africa.

Horns on frontal bone.

Skull, young. S. Africa.

The *Spring Bok* is found throughout the whole of South Africa, but in no part so numerous as in the colony, the north-eastern division of which they traverse in herds of thousands, devouring everything they meet with in their course. They remain only a portion of the year, and it is during that season the Lion is most frequently found there. Vast numbers are killed, and the flesh dried against a season of scarcity.—*A. Smith.*

The *Springbock* at certain periods make a *trak bokken* or grand migration. They march slowly and steadily along, like the flood of a river, about half a mile in width. These vast legions will continue streaming along in an unbroken, compact phalanx for two or more hours.—*R. G. Cumming, Hunter's Life, i. 122.*

## 7. ÆPYCEROS.

Horns lyrate, elongate, wide-spreading, black, curved outwards from the base, then backwards and upwards at the tip. Face tapering. Nose simple. Crumen none. Knees not tufted. Feet with tuft of (black) hair near pasterns. Female hornless?, teats 2.

Skull with "no suborbital fissure nor fossa, but a wide opening on the side of the muzzle, between the maxillary and intermaxillary bones; the masseteric ridge rising before the orbit; the auditory bulla large and prominent, with only a small groove on its outer side to receive the attachment of the stylohyal bone; the occiput broad, somewhat produced downwards; its basal portion with the posterior pair of tubercles broad, the anterior ones small. Molars without the supplemental lobe."—Turner. *Skull*, t. 7. f. 3.

*Antilope vera*, sp., *Licht. Berl. Mag.* vi. 1814.

A. (*Ceratophorus*) *Gazella*, sp., *Blainv. Bull. Sci. Phil.* 1816.

*Gazella*, sp., *Gervais, Supp. D. S. N.* i. 261, 1840.

*Antilope*, *Gray, Ann. & Mag. N. H.* 1847; *Knowsley Menag.* 6;

*Turner, P. Z. Soc.* 1849.

*Æpyceros*, *Sundevall, Pecora*, 87.

Major H. Smith erroneously assigns a suborbital sinus to this animal.

# 1. *ÆPYCEROS MELAMPUS*. PALLAH OR ROOYE BOG.

Bay; sides and beneath paler. Belly, anal disk, and lower side of tail white. Crown, anal streak and tip of tail blackish. Tuft above feet, and back of feet black.

*Antilope (vera) Melampus*, *Licht. Berl. Mag.* vi. 167, 1814; *Burch. Trav.* ii. 301; *Reise*, ii. 544. t. 4; *Schreb. Saugh.* 1224. t. 274; *Harris, Wild Anim. Africa*, t. 15.

A. (*Gazella*) *Euchore*, *Desm. Mamm.* 456; *H. Smith, G. A. K.* iv. 198. t., v. 828; *Fischer, Syn.* 463. 630; *Burchell, Trav.* ii. 301.

*Antilope Melampus*, *Gray, List Mam. B. M.* 162; *Cat. Osteol. B. M.* 56; *Knowsley Menag.* 6; *Turner, P. Z. S.* 1849.

*Gazella melampus*, *Gervais, Supp. D. S. N.* i. 261.

*Æpyceros melampus*, *Gray, Proc. Zool. Soc.* 1850, 116.

*Pallah, S. Daniel, Afric. Scen.* n. 9.

*Betjuan, Caffers.*

*Hab.* South Africa.

Adult male. S. Africa. From Dr. Smut's Collection.

Adult female. From Dr. Smut's Collection.

Young male. From the South African Museum.

Female. S. Africa. Presented by the Earl of Derby.

**OSTEOLOGY.** *Skull*, t. 7. f. 3. *Turner, P. Z. Soc.* 1849, skull.

**Horns.** South Africa. Presented by William Burchell, Esq., LL.D.

Two pairs of horns. S. Africa.

Two pairs of horns. S. Africa. Mr. Argent's Collection.

The *Pallah* is common in the wooded country north of the Kurrichane, where it occurs in herds equally as large as those of the *Spring Bok* are more to the southward. It feeds on grass or the more delicate twigs of the brushwood. When startled, they generally move off in perfect files, and will not diverge far from the course they first adopt, even to avoid a man, which renders them an easy prey to the hunter who carries fire-arms. Where not disturbed by hunters, they are less shy than the *Spring Bok*. The flesh is esteemed.—*A. Smith*.

### 8. ANTILOPE.

Horns elongate, subspiral, erect, diverging. Face tapering. Nose simple. Crumen large. Skull with a small suborbital fissure and a very large suborbital pit. The tubercles and median grooves of the basioccipital bone well developed, t. 8. f. 1. 3.

*Hab.* India. Gregarious.

*Cervicapra*, *Gray*, *Ann. & Mag. N. H.* 1847, 231, not *Blainv.* nor *Sunderall*; *Knowsley Menag.* 6; *Turner*, *P. Z. S.* 1850.

Antelope (*Cervicapra*), sp., *Blainv. Bull. Soc. Phil.* 1816; *Desm. Mam.* 457; *H. Smith, Griffith A. K. v.* 1827; *Gervais, Supp. D. S. N. i.* 260; *Gray, Proc. Zool. Soc.* 1850, 117.

Antelope (*Gazellæ*), sp., *Sundevall, Pecora*, 86.

*Strepsiceros*, sp., *Rüppell, Verz. Senck.* 183, 1845.

### 1. ANTILOPE BEZOARTICA. The ANTELOPE or SASIN.

Grey brown or black. Lips, orbits, chest, lower part of sides, belly, edge and inside of limbs, white. Nose, front of shoulder and outside of thighs, end of tail and front of feet, blackish. Neck redder. Young with a narrow pale streak on the upper part of sides.

Antelope *Cervicapra*, *Pallas, Misc. Zool.* 9; *Spic. i.* 18. t. 1, 2. xii. 19; *Gmelin, S. N. i.* 192.

A. *Gazella Cervicapra*, *Licht. Berl. Mag. vi.* 172; *Schreb. Saugth.* 1214. t. 268. from *Pallas*.

A. (vera) *Cervicapra*, *Blainv. B. S. Phil.* 1816, 75; *Desm. Mam.* 451; *Fischer, Syn.* 457. 626; *F. Cuvier, Mam. Lith. t.*; *Gervais, l. c.* 260; *H. Smith, G. A. K. v.* 831; *Gray, Illust. Ind. Zool. t.*; *Hodgson, J. A. S. Beng. x.* 913; *Calcutta Journ. N. H. iv.* 290; *Proc. Zool. Soc.* 1834, 99.

*Capra Cervicapra*, *Linn. S. N. i.* 96.

*Strepsiceros Cervicapra*, *Rüppell, Verz. Senck.* 183, 1845.

*Cervicapra bezoartica*, *Gray, List Mam. B. M.* 159; *Cat. Osteol. Spec. B. M.* 56; *Cat. Hodgson Coll. B. M.* 26; *Ann. & Mag. N. H.* 1847, 230; *Turner, Proc. Z. Soc.* 1849.



- Antelope bilineata, *Temm. Mus. Leyden* (young).  
*Damalis Cervicapra* (Ledmee), *J. Brookes, Cat. Mus.* 64, 1828.  
*Capra Bezoartica*, *Aldrov. Bisulc.* 256.  
*Gazella*, *Jonston, Quad.* t. 29; *Brisson, R. A.* 68.  
*Gazella Africana*, *Raii Syn.* 79.  
*Tragus Strepsiceros*, *Klein, Quad.* 18.  
*Gazelle*, *Perr. Anim.* i. 93. t. 11.  
*Lidmee, Shaw, Trav.* 243?  
 Antelope and Antelope des Indes, *Buffon, H. N.* xii. 215, 217.  
 t. 35. t. 36. f. 1, 2; *Suppl.* vi. t. 18, 19; *F. Cuvier, Mam. Lith.* t.  
 Common Antelope, *Penn. Syn.* 32; *Quad.* i. 89. t. 15; *Shaw, Zool.* ii. 336. t. 191.  
*Bahmunnee Hurn, Sykes.*  
*Hab.* India, in the dry, open plains, in flocks of scores.  
 A male. Madras, India. Presented by Walter Elliot, Esq.  
 A male. India.

#### OSTEOLOGY. *Skull*, t. 8. f. 1-3.

Antelope, *Daub. in Buffon H. N.* xii. 273. t. 35. t. 36. f. 1-3.

Three bases of skulls and horns. India.

Skull and horn. India.

Skull and horn. India.

Skull and horn. India.

Skull, with horns, of adult male. India. Presented by B. H. Hodgson, Esq.

A pair of horns. Presented by B. H. Hodgson, Esq.

One odd deformed horn. Presented by B. H. Hodgson, Esq.

Two pairs of horns. India. Mr. Argent's Collection.

#### DRAWINGS.

Drawing of a skull of a male.—*Hodgson, Icon. ined. B. M.* t. 186. f. 9, 10. Presented by B. H. Hodgson, Esq.

Drawing of old male, female and young.—*Hodgson, Icon. ined. B. M.* t. 155. Presented by B. H. Hodgson, Esq.

The Black Antelopes are very gregarious on the open, dry plains of India.—*Hodgson.*

*b. Horns small, slender, straight, conical, tapering, more or less diverging, and often bent forward at the tip. Muffle generally large and moist.*

*a. Crumen large. Muffle large.*

#### 9. TETRACERUS.

Muffle large. Crumen large, longitudinal. Horns 4; front

pair very short, placed over the orbits; hinder on back edge of frontal, conical, straight. Skull like *Cephalophus*, with nasal bones not expanded. Suborbital fossæ large, shallow, occupying nearly the whole of the cheek. Knee-tufts none. Females hornless. *Skull*, t. 9.

*Tetracerus*, Leach; *H. Smith, Griffith A. K.* v. 1827; *Fischer, Syn. Mam.* ii. 624; *Gray, Ann. & Mag. N. H.* 1847, 231; *Proc. Zool. Soc.* 1850, 117; *Knowsley Menag.*; *Turner, P. Z. S.* 1850.

*Cervicapra*, sp., *Blainv. Bull. Soc. Phil.* 1816, 75.

*Cervicapra* *c. tetracerus*, *Gervais, Supp. D. S. N.* i. 262.

*Tetracerus*, *J. Brookes, Cat. Mus.* 64, 1828.

*Tetracerocidae*, *J. Brookes, Cat. Mus.* 64, 1828.

# 1. TETRACERUS QUADRICORNIS. The CHOUSINGHA.

Front pair of horns conical, distinct.

*Antelope (Cervicapra) quadricornis*, *Blainv. Bull. Soc. Philom.* 1816, 75, 78; *Journ. Phys.* 1816, t. . f. ; *Isis*, 1819, t. 12. f. 3, skull; *Desm. Mamm.* 466; *Fischer, Syn.* 471. 639.

*A. Tetracerus quadricornis*, *H. Smith, G. A. K.* iv. 256. t. 181. f. 3. t. 186, v. 845.

*Antelope Chickara*, *Hardw. Linn. Trans.* xiv. 520. t. 15, 16; *Hodgson, Proc. Z. S.* 1834, 99; *Zool. Nep. ined. t.*; *Fischer, Syn.* 471. 639.

*A. Tetracerus Chickara*, *H. Smith, G. A. K.* v. 844; *R. Hill, Linn. Trans.* xv. 501. t. 20.

*A. Chickara*, *Hodgson, J. A. S. Beng.* i. 346, 347.

*Tetracerus Chickara*, *F. Cuv. Mam.* t. 8.

*Tetracerus striaticornis*, *Leach, MSS.*

*Tetracerus quadricornis*, *Gray, List Mam. B. M.* 159; *Cat. Osteol. Spec. B. M.* 57; *Cat. Hodgson Coll. B. M.* 26; *Ann. & Mag. N. H.* 1847; *Proc. Zool. Soc.* 1850, 117; *Knowsley Menag.* 6; *Turner, P. Z. S.* 1849.

*Tschikkara*, *F. Cuvier, Mam. Lith. t.* , from *Hardwicke, Icon.*

*Tetracerus Chickara*, *Hodgson, Journ. A. S. B.* x. 413; *Calcutta Journ. N. H.* iv. 291.

*Antelope tetracornis*, *Hodgson, Journ. A. S. Beng.* iv. 542, v. 242.

*Tetracerus striaticornis (Chickara)*, *Leach in Brookes' Cat. Mus.* 64, 1828.

*Cervus albipes*, *F. Cuvier, Mam. Lith. t.* ♀.

"*Cervus labipes*, *F. Cuvier*," *Lesson, Sundevall.*

*Cervus (Styllocerus) labipes*, *Lesson, Nov. Tab. R. A.* 174.

*Chousingha*, *Hindoos.*

*Hab. India. Nepal. Thibet. Mus. Ind. Comp.*

A male. Nepal. Presented by B. H. Hodgson, Esq.

Two males; front of fore legs dark. Nepal. Presented by B. H. Hodgson, Esq.

A female; rufous, without any dorsal streak, and with the front of the fore legs pale. Nepal. Presented by B. H. Hodgson, Esq.

The imperfect skin of a male, with two horns. Nepal. Presented by B. H. Hodgson, Esq.

**OSTEOLOGY.** *Skull*, t.

Horns. North India.

Frontal bone, with horns.

Skull, with lower jaw. India. Presented by B. H. Hodgson, Esq.

Skull. India.

**DRAWINGS.**

Drawing of male and female.—*Hodgson, Icon. ined. B. M. t. 152.* Presented by B. H. Hodgson, Esq.

Drawing of male, copied from Hamilton Smith, with details of head added.—*Hodgson, Icon. ined. B. M. t. 153.* Presented by B. H. Hodgson, Esq.

Drawing of male, with details of head.—*Hodgson, Icon. ined. B. M. t. 154.* Presented by B. H. Hodgson, Esq.

M. De Blainville, in describing this animal, from Dr. Buchanan Hamilton's drawing in the India House Library, read *Moor-shadabad*, the habitat, for *Hoornadabad*, and thought it the name of the animal.

The *Chouka* inhabits the forests of India, avoiding the mountains and open plains. They are not gregarious; rutting in summer, and gestating six months, the young mostly born in January or February. They are very shy, and when hunted lie close or go off far ahead, bounding like the common Antelope, and hence one of their names from *Chouk*, a leap.—*Hodgson.*

**2. TETRACERUS IODES. The RUSTY-RED CHOUSINGHA.**

*Tetracerus iodes*, *Hodgson, Calcutta J. N. H. 1847, t. 4. f. 3.*

*Hab.* India. Nepal.

**OSTEOL.** *Hodgson, l. c. t. 4. f. 3, skull.*

**3. TETRACERUS PACCERVIS. The FULL-HORNED CHOUSINGHA.**

*Tetracerus paccervis*, *Hodgson, Calcutta J. N. H. 1847, t. 4. f. 1, 2.*

*Hab.* India. Nepal.

**OSTEOL.** *Hodgson, l. c. t. 4. f. 1, 2, skull.*

4. *TETRACERUS SUBQUADRICORNUTUS*. The JUNGLIBURKA.

Front pair of horns rudimentary, tubercular; hinder conical, subcylindrical. Pale brown, sides rather paler. Chest, belly, inside and front of legs whitish. Feet paler, varied. *Female*: front of legs blackish.

*Antelope subquadricornutus*, *Elliot, Madras Journ.* 35. t. 4. f. 2.

*Tetracerus subquadricornutus*, *Gray, List Mam. B. M.* 159; *Ann. & Mag. Nat. Hist.* 1847; *Knowsley Menag.* 7; *Proc. Zool. Soc.* 1850, 117; *Turner, P. Z. S.* 1849.

*Antelope* (brown), *Sykes, Proc. Zool. Soc.* 1831, 105.

*Hab.* India. Bombay.

A male and female, stuffed. Bombay. Presented by Walter Elliot, Esq.

Male and female. Madras. Presented by J. C. Jerdon, Esq.

## OSTEOLOGY.

Skull, female. Madras. Presented by J. C. Jerdon, Esq.

10. *CALOTRAGUS*.

Muffle large. Crumen arched, transverse. Horns subulate, elongate, erect. Hoofs triangular, flattish beneath, acute in front; false hoofs small or none. Crown of head smooth. Tail very short. Groin and orbits nakedish. Knees not tufted; inguinal pores none. Ears elongate. *Females* hornless. Teats 4. Skull with "a small suborbital fissure, with a large deep fossa suddenly pressed in before the orbit; the masseteric ridge rising a little before the orbit; the auditory bulla rather large and prominent; the basioccipital bone flat and smooth; the median incisors expanded at their summits, and the molars without supplemental lobes." *Skull*, t. 8. f. 4, 5.

*Calotragus*, part., *Sundevall, Pecora*, 68.

*Calotragus* (grisea), *Gray, Ann. & Mag. N. H.* 1847, 232; *Knowsley Menag.* 7; *Proc. Zool. Soc.* 1850, 118.

*Tragulus* (grisea), *H. Smith, Griffith A. K.* v. 182; not *Brisson* nor *Ogilby*.

*Cervicapra*, sp., *Blainv. Bull. Soc. Phil.* 1816, 75.

*Gazella*, sp., *Licht. Berl. Mag.* 1814.

*Oreotragus*, sp., *Gray, List Mam. B. M.* 164; *Turner, P. Z. S.* 1850.

*Redunca*, sp., *H. Smith*.

*Cervicapra c. Tragulus*, sp., *Gervais, Supp. D. S. N.* 262.

\* *False hoofs none.*

1. CALOTRAGUS CAMPESTRIS. The STEINBOC.

Fulvous ash. Hair uniform. Small spot on nose and two diverging streaks on crown to nape blacker. Upper part of throat, chest and abdomen white. Ears three-fourths the length of head. False hoofs none.

Var. 1. Glaucous, hair white-tipped.

Var. 2. Crown without black streak. Throat whiter.

Antelope (Gazella) *Tragulus*, Forster, MSS. 52; *Licht. Berl. Mag.* vi. 176, 1814; *Saugh.* t. 19 ♂ ♀; *Goldfuss in Schreb. Saugh.* 1254; *Desm. Mamm.* 458; *Fischer, Syn.* 464. 631.

*Calotragus Tragulus*, Gray, *Ann. & Mag. N. H.* 1847; *Knowsley Menag.* 7.

A. *Cervicapra Stenbock*, *Blainv. B. S. Phil.* 1816, 75.

Antelope Ibex, *Afzel. Nov. Act. Upsal.* vii. 254.

*Oreotragus Tragulus*, Gray, *List Mam. B. M.* 164; *Turner, P. Z. S.* 1849.

Antelope *campestris*, *Thunb. Mem. Acad. Petersb.* iii. 313, 1811.

Antelope *capensis*, *Afzelius, N. Act. Upsal.* vii. 260, 1815.

Antelope *fulvo-rubescens*, *Desmoul. D. Class. H. N.* i. 446.

Antelope (*Tragulus*) *rupestris*, *Burchell, Trav.* i. 202. 281, ii. 15; *H. Smith, G. A. K.* v. 838; *Harris, W. A. Africa*, t. 25. f. 2.

Steinbock, *Buffon, H. N. Supp.* vi. 185.

*Tragelaphus Tragulus*, *Rüppell, Verz. Senck.* 181.

*Hab.* S. Africa.

Three males. S. Africa.

Three females. S. Africa.

Four young. S. Africa.

OSTEOLOGY. *Skull*, t. 8. f. 4, 5.

Two skulls, males.

One skull, female.

Two skulls, young.

Var. ? *Paler.*

Antelope *pediotragus*, *Afzel. Nov. Act. Ups.* vii. 260.

Antelope *pallida*, *H. Smith, G. A. K.* v. 841.

Antelope (Gazella) *Tragulus pallida*, *Licht. Berl. Mag.* vi. 176; *Fischer, Syn.* 464. 632.

*Bleekbock*, *Forster, MSS.*; *Buffon, H. N. Supp.* vi. 186.

A. *Tragulus pallida*, *H. Smith, G. A. K.* v.

*Vlacksteenbock*, *Sparrm. Reise*, 630.

Antelope *rufescens*, *Burchell.*

A. *Tragulus rufescens*, *H. Smith, G. A. K.* iv. 248. t., v. 839.

*Var. ?*

*Antilope traguloides* (Ogilby's Steinbok), *Ogilby, MSS.*; *Waterhouse, Supp. Cat. Zool. Soc. Mus.* n. 385 B. & 385 B. A. 1839.

*Hab.* S. Africa.

This species varies much in colour, perhaps according to the season; sometimes the hairs are whitish at the tip, giving the fur a glaucous appearance; the black streaks are as distinct in the young as in the adult.

*A. rupestris* (the *Steinbok*) has favourite feeding- and resting-places, to which it returns as speedily as possible if driven from them. It occasionally crosses pools and streams, and even lies down in them, to avoid leaving its scent, when hunted by dogs. — *A. Smith.*

**\*\* False hoofs small.**

## 2. CALOTRAGUS MELANOTIS. The GRYS BOG.

Red bay, with intermixed white hairs. Crown with two dark streaks. Ears two-thirds the length of head. False hoofs small.

*Antilope melanotis*, *Thunb. Mem. Acad. Petersb.* iii. 312, 1811; *Afzel. Nov. Act. Upsal.* vii. 257, 1815; *Goldf. Schreb. Saugh.* 1235; *Licht. Saugh.* t. 12; *H. Smith, G. A. K.* v. 840; *Desm. Mam.* 459; *Fischer, Syn.* 465. 632; *Harris, W. A. Anim.* t. 26.

*Tragelaphus melanotis*, *Rüppell, Verz. Senck.* 181, 1845.

*Antilope grisea*, *Cuv. Dict. Sci. Nat.* xi. 244, 1816.

*A. Tragulus grisea*, *H. Smith, G. A. K.* v. 840.

*A. Cervicapra grisea*, *Blainv. B. S. Phil.* 1816, 75.

*Antilope* (*Gazella*) *Tragulus* var. *melanotis*, *Licht. Berl. Mag.* vi. 176.

*Cervicapra* (*Tragulus*) *grisea*, *Gervais.*

*Oreotragus melanotis*, *Turner, P. Z. S.* 1849.

*Antilope rubro-albescens*, *Desm. Dict. Class. H. N.* ii. 446.

*Oreotragus griseus*, *Gray, List Mam. B. M.* 164.

*Calotragus melanotis*, *Gray, Ann. & Mag. N. H.* 1847, 217;

*Proc. Zool. Soc.* 1850; *Knowsley Menag.*

*Grysbog*, *Forster, MSS.*; *Buffon, Supp.* vi. 183.

*Var. pallida.* Pale ashy white. Hairs some white, others lead-coloured with grey tips.

*Calotragus melanotis pallida*, *Gray, Knowsley Menag.* 7; *Proc. Zool. Soc.* 1850, 118.

*Hab.* S. Africa.

**Male.** Cape of Good Hope.

Female. Cape of Good Hope. Presented by William Bur-  
chell, Esq., LL.D.

Young, with two large black oblong spots on each side of the  
back of the forehead and the tip of the nose. Cape of Good  
Hope. From M. Verreaux' Collection.

Yellowish grey, with two black oblong spots on back of fore-  
head. From M. Verreaux' Collection.

## 11. SCOPOPHORUS.

Muffle small, bald. Tear-bag transverse. Horns subulate,  
elongate, acute, slightly recurved at the tips. Knees largely  
tufted. Inguinal pores distinct and bearded. Ears moderate,  
with a naked spot on the outside of their base. Hoofs triangu-  
lar; false hoofs distinct. Skull like *Callotragus*.

*Scopophorus* (Ourebi), *Gray, Ann. & Mag. N. H.* 1846, 232;  
*Knowsley Menag.* 7; *Proc. Zool. Soc.* 1850, 118.

*Calotragus*, sp., *Sundevall, Pecora*, 68.

*Cervicapra c. redunca*, sp., *Gervais, l. c.* 261, 1840.

*Oreotragus*, sp., *Gray, List Mam. B. M.* 164; *Turner, P. Z.*  
*Soc.* 1847.

### 1. SCOPOPHORUS OUREBI. The OUREBI.

Temple spot small, indistinct. Fur red brown. Cheek paler.  
Crown darker red brown. Orbit, chest, belly and middle of  
upper part of inner side of legs, white. End of tail, arched line  
before the eyes, and spot between the ears, black.

*Var.* End of nose blackish.

*Antelope Scoparia*, *Schreb. Saugth.* t. 261; *Desm. Mam.* 464;  
*Licht. Saugth.* t. 13; *Fischer, Syn.* 468. 658.

*A. redunca scoparia*, *H. Smith, G. A. K.* v. 836.

*Cervicapra Redunca scoparia*, *Gervais, l. c.* 261.

*Antelope melanura*, *Bechst.*

*Antelope Ourebi*, *Shaw, Zool.* ii. 320; *Lesson, Man.*

*Ourebi*, *Allam, Buffon H. N. Supp.* v. 33. t. 12.

*Scopophorus Ourebi*, *Gray, Ann. & Mag. N. H.* 1846, 232;  
*Knowsley Menag.* 7; *Proc. Zool. Soc.* 1850, 118.

*Ourebi Antelope*, *Penn. Quad.* i. 79.

*Oreotragus Scoparius*, *Gray, List Mam. B. M.* 164; *Turner,*  
*P. Z. S.* 1849.

*Hab.* S. Africa.

Male, female and young. S. Africa. Cape of Good Hope.  
From the South African Museum.

Two females. S. Africa.

## OSTEOLOGY.

Two skulls. S. Africa.

The *Ourebi* live in the continuous swards of tall grass near the sea-coast, but they are nearly exterminated near the colony, and now chiefly confined to the country between the Uuzimvooboo River and Port Natal.—*A. Smith*.

## 2. SCOPOPHORUS MONTANUS. The GIBARI.

Temple spot large, deep (more than half an inch over), naked. Fur greyish brown. Cheeks paler. Crown red brown. Orbits, chest, belly, under side of tail, and middle of the inner side of the upper part of the legs, white. End of tail and arched line before the eyes black.

*Antelope montana*, Rüppell, *Zool. Atlas*, t. 3; *Fischer, Syn.* 469.

*Tragelaphus montanus*, Rüppell, *Verz. Senck.* 181.

*Scopophorus montanus*, Gray, *Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 7. t. 5; *Proc. Zool. Soc.* 1850, 119.

*Hab.* Eastern Africa; Abyssinia; Rüppell. West Africa; Gambia; *Earl of Derby. Mus.* Earl of Derby.

Very like the former, but grey brown, and the temporal spot much larger, deeper, more distinct and bald, both when alive and in the skin, so that it does not depend on the stuffing.

## 12. OREOTRAGUS.

Muffle large. Crumen arched, transverse. Horns subulate, elongate. Hoofs squarish, high, compressed, much contracted, concave beneath. False hoofs large, blunt. Crown of head smooth. Tail very short. Hair thick, goat-like, spread out. *Female* hornless. Teats 2.

*Oreotragus*, Gray, *Ann. & Mag. N. H.* 1846, 231; *Proc. Zool. Soc.* 1850, 119; *Knowsley Menag.* t.; *Sundevall, Pecora; Harris, W. Anim. Afr.*

*Tragulus*, sp., *H. Smith, G. A. K.* v. 1827; *Fischer*, ii. 424, not *Pallas*.

*A. cervicapra*, sp., *Blainv. Bull. Soc. Phil.* 1816; *Desm. Mam.* 460.

*Cervicapra c. Tragulus*, sp., *Gervais, l. c.* 262, 1840.

## 1. OREOTRAGUS SALTATRIX. The KAINSI or KLIPPSPRINGER.

Dark, brown yellow, grised. Hair grey, brown at the end, with a short yellow tip, beneath whitish. Edge of ears and feet above the hoofs black.



Antelope *Oreotragus*, *Forster*, *MSS.* 58; *Schreb. Saugth.* 1228. t. 259.

A. (*Gazella*) *Oreotragus*, *Licht. Berl. Mag.* vi. 175; *Saugth.* t. 15; *Thunb. Mem. Acad. Petersb.* iii. 511; *Desm. Mam.* 460; *Fischer, Syn.* 466. 634.

A. *Tragulus oreotragus*, *H. Smith, G. A. K.* v. 837.

*Oreotragus Saltatrix*, *Harris, W. Anim. Afr.* t. 24. f. 2.

*Cervicapra Tragulus oreotragus*, *Gervais.*

A. (*Cervicapra*) *oreotragus*, *Desm. Mam.* 460.

Antelope *Saltatrix*, *Bodd. Elench.* 141; *O. Des Mur. & F. Pré-vost, Voy. en Abyssinie*, vi. 33. t. 4.

*Tragelaphus oreotragus*, *Rüppell, Verz. Senck. Samml.* 181, 1845.

*Gazelle, Le Vaillant, Deuz. Voy. d'Afrique*, i. 162.

*Klippspringer*, *Buff. H. N. Supp.* vi. 183. t. 29, cop. *E. M.* t. 54. f. 3; *Penn. Quad.* i. 80; *Shaw, Zool.* ii. 321.

*Kainsi, Hottentots.*

*Sessa* in *Amareen.*

*Sessah* in *Tigren.*

*Hab.* Africa. S. Africa; Cape of Good Hope. East Africa; Abyssinia.

Male and female, stuffed. S. Africa.

Varies in brightness and depth of colour according to the season.

### 13. NESOTRAGUS.

Muffle large, bald. Crumen large, deep, arched. Face and forehead not crested. Ears large. Horns nearly straight, elongate, strong, many-ringed, incumbent, in the direction of the facial line nearly parallel. False hoofs none. Tail very short. *Females* hornless.

Very like *Neotragus* in form and character.

*Nesotragus*, *Von Duben, Vet. Ac. Oefvers.* 1846, 221; *Sundevall, Pecora*, 134; *Gray, Knowsley Menag.* 8; *Proc. Zool. Soc.* 1850, 119.

#### 1. NESOTRAGUS MOSCHATUS.

Reddish grey. Belly white. Legs pale reddish. Hair of back brown, reddish above the middle, with an obscure pale dot and blackish tip.

*Nesotragus moschatus*, *V. Duben, l. c.*; *Sundev. Vet. Acad. Oefversigt*, 1846, 221; *Sundevall, Pecora*, 134; *Gray, Knowsley Menag.* 8; *Proc. Zool. Soc.* 1851, 119.

*Hab.* E. Africa; Island of Zanzibar. Male and female in Stockholm Museum.

*β. Crumen large. Nose ovine. Muffle none.*

#### 14. NEOTRAGUS.

Muffle none. Nose ovine. Nostrils close together. Crumen roundish. Horns short, conical, recumbent. Tail very short, crown crested. *Female* hornless.

*Neotragus*, *H. Smith*, *G. A. K.* 1827; *Fischer*, *Syn.* ii. 624; *Wagner*; *Gray*, *Ann. & Mag. N. H.* 1846, 231; *Knowsley Menag.* 8; *Proc. Zool. Soc.* 1850, 120; *Sundevall*, *Pecora*, 67. *Madoqua*, *Ogilby*, *P. Z. Soc.* 1836, 137.

*Cervicapra*, sp., *Blainv. Bull. Soc. Phil.* 1816, 73.

*Cervicapra*, § *g. Neotragus*, *Gervais*, *l. c.* 263.

Colonel Hamilton Smith did not observe the crumen.

#### 1. NEOTRAGUS SALTIANA. The MADOQUA.

*Antelope Cervicapra Saltiana*, *Blainv. Bull. Soc. Philom.* 1816, 75. 79; *Journ. Phys.* 1818. t. . f. ; *Isis*, 1819, t. 12. f. 5, 9, skull; *Desm. Mamm.* 465; *Fischer*, *Syn.* 470. 638; *Licht. Saugth.* t. 16; *Rüppell*, *Zool. Atlas*, 55. t. 21; *Ehrenberg*, *Symb. Phys.* t.

*Neotragus Saltiana*, *Gray*, *Cat. Osteol. B. M.* 561; *Ann. & Mag. N. H.* 1846, 231; *Knowsley Menag.* 8; *Proc. Zool. Soc.* 1850, 120.

*Antelope Neotragus Madoka*, *H. Smith*, *G. A. K.* v. 857.

*Tragelaphus Hemprichii*, *Rüppell*, *Verz. Senck.* 181.

*Antelope Hemprichianus*, *Ehrenb. Symb. Phys.* t. 7.

*Antelope Grimmia*, *Rüppell*.

*Antelope Hemprichii*, *Rüppell*, *Abyss.* t. 5.

*Cervicapra Neotragus Saltiana*, *Gervais*, *l. c.* 263.

*Madoqua Saltiana*, *Ogilby*, *P. Z. S.* 1836, 137.

*Neotragus Hemprichianus*, *Sundevall*, *Pecora*, 67.

*Madoka Saltiana*, *Gray*, *List Mamm. B. M.* 164.

*Hab.* Abyssinia.

Male and female. Abyssinia. From the Frankfort Museum.

*ANAT. Journ. Phys.* t. . f. ; *Isis*, 1819, t. 12. f. 5, 9.

Frontal bone with horns. Abyssinia.

The specimen described by M. De Blainville.

*γ. Tear-bag replaced by a glandular line across the face. Muffle large, bald. Africa.*

#### 15. CEPHALOPHUS.

Muffle large. Crumen none, but a naked glandular line, formed of two series of pores, on the side of the cheek. Crown

crested, forming a tuft between the horns. Horns short, conical, far back on the hinder edge of the frontal bone, and inclined backwards. Skull without any suborbital fissure, a large sub-orbital pit occupying the whole side of the cheek; the nasal bones expanded behind, reaching over on the sides into the sub-orbital pit; in other respects like *Oreotragus*.

*Hab.* Africa.

*Cephalophus*, *H. Smith, Griffith A. K.* v. . 1827; *Fischer, Syn.* 624; *Gray, Ann. & Mag. N. H.* 1846, xviii. 162 & 231; *Knowsley Menag.* 8; *Proc. Z. Soc.* 1850, 120; *Turner, P. Z. S.* 1850 (not *Cephalopus*, as quoted by *Sundevall, Pecora*, 66).

*Cephalolophus*, *Wagler*.

*Cephalophorus*, *Gray, List Mam. B. M.* 162.

*Cervicapra*, sp., *Blainv. Bull. Soc. Phil.* 1816; *Desm. Mam.* 458.

*Cervicapra*, § *f.* *Cephalophus*, *Gervais, l. c.* 261, 1840.

*Tragul* (*pygmæus*), *Ogilby, P. Z. S.* 1836, 138.

*Sylvicapra* (*mergens*), *Ogilby, P. Z. S.* 1836, 138.

*Sylvicapra*, *Sundevall, Pecora*, 66.

*Tragelaphus*, sp., *Rüppell, Verz. Senck.* 181, 1845.

*Grimmia*, *Laurillard*.

Professor Sundevall adopts Mr. Ogilby's name for the genus. *Cephalophus* was first used; but he rejects it, because it is badly formed. Wagler has emendated Colonel H. Smith's name by changing it to *Cephalolophus*.—*Pecora*, 66.

Professor Sundevall has in his specific characters laid some stress on the direction of the lachrymal streak. I find, on comparing different specimens of the same species, that little reliance can be placed on this character, in stuffed specimens at least, for the direction of the streak is altered according as the skin of the face is more or less stretched.—*Gray, Ann. & Mag. N. H.* xviii. 163.

“ \* *Knees and hind legs tufted. Ears and horns elongate. Crumens under the eyes, and a narrow naked streak on cheeks.* ”

#### 1. CEPHALOPHUS? QUADRISCOPA. FOUR-TUFTED ANTELOPE.

“ Buff; paler on the sides. Tail, knee-tuft, front of nose, narrow inferior lateral and anal streak, and streak across legs, blackish. Lips, breast, inside of limbs, vent and houghs, white.”

Antelope *Cephalophus quadriscopa*, *H. Smith, G. A. K.* iv. 261. t. 188, v. 847; *Fischer, Syn.* 634.

*Cephalophus? quadriscopa*, *Gray, Ann. & Mag. N. H.* 1846, 164; *Knowsley Menag.* 8; *Proc. Zool. Soc.* 1850, 120.

*Hab.* Senegal.

This specimen is only known from Colonel Hamilton Smith's description and figure, who informs me that the specimen was not preserved after its death.

**\*\* Knees not tufted. Ears elongate, acute. Horns slender, elongate, subangular in front.**

## 2. CEPHALOPHUS GRIMMIA. The IMPOON or DUYKER.

Yellowish brown (greyish in winter). Hair yellowish, with black tips. Forehead yellowish bay. Inside of ears, chin, throat, abdomen, inside of fore and hind legs, and under side of tail, white. Feet, streak on the nose and up the legs, and upper part of the tail, black. Ears elongate, nearly as long as the head, acute. Horns black, elongate, slender; base rugose and subangular in front. Skull small, short. Suborbital pit large, deeply concave. The intermaxilla (in three specimens) reaching just up to the edge of the nasals. Nasal hole moderate, sides nearly parallel.

?*Capra sylvestris Africana*, N. Grimm, *Mis. Cur. Norimb.* 1706, t. 13.

*Capra Grimmii*, *Raii Syn.* 80.

*Moschus Grimmia*, *Linn. S. N. i.* 92, from Grimm.

*Capra Grimmia*, *Linn. S. N. ed. 10. i.* 70, from Grimm.

Antelope (*Gazella*) *Grimmia*, *Licht. Berl. Mag.* vi. 177 (1814).

Antelope *Cervicapra Grimmia*, *Blainv. Bull. Soc. Phil.* 1816, 75.

*Cephalophus Grimmia*, *Gray, Ann. & Mag. N. H.* 1846, 163; *Knowsley Menag.* 8. t. 1. f. 1, t. 2. f. 1, 2; *Proc. Zool. Soc.* 1850, 120.

Antelope (*Cervicapra*) *mergens*, *Blainv. Bull. Soc. Philom.* 1817; *Desm. Mam.* 463; *Licht. Saugth.* t. 11; *Burchell, Trav.* ii. 187; *Fischer, Syn.* 468. 635.

A. *Cephalophus mergens*, *H. Smith, G. A. K.* v. 849.

*Cervicapra* (*Cephalophus*) *mergens*, *Gervais, l. c.* 262.

Antelope *nictitans*, *Thunb. Mem. Petersb.* iii. 312, 1811.

*Cephalophorus mergens*, *Gray, List Mamm. B. M.* 162.

*Sylvicapra mergens*, *Ogilby, P. Z. Soc.* 1836, 138; *Sundevall, Pecora*, 66. 133.

*Cephalophus mergens* (Duiker), *Gray, Cat. Osteol. B. M.* 57; *Harris, W. A. S. A.* t. 15. f. 2.

*Tragelaphus mergens*, *Rüppell, Verz. Senck.* 181.

*Cephalophorus Burchellii*, *Gray, List Mamm. B. M.* 162.

Duyker or Duykerbok, *Dutch at Cape.*

*Hab.* S. Africa. Cape of Good Hope.

*Var.?*

Antilope Cephalophus Platous, *H. Smith, G. A. K.* iv. t., v. 846.

Antilope (Sylvicultrix)  $\beta$ . platyotis, *Fischer, Syn.* 634.

*Hab.* S. Africa.

*Var.?*

Ptoox, *Licht. Berl. Mag.* vi. 177.

Antilope Cephalophus Ptoox, *H. Smith, G. A. K.* v. 850 (young?);  
*Fischer, Syn.* 635.

*Hab.* S. Africa. Cape of Good Hope.

Adult male and female. South Africa. S. African Museum.  
Cephalophorus Burchelli (*a. & b.*), *Gray, List Mam. B. M.* 162.

An adult male. S. Africa.

Two young females. S. Africa.

*Var. 1.* Back brighter red. Black streak on face from nose to base of horns. Orbits white. The hairs with short black tips, and a narrow subapical whitish ring. Shanks whitish.

*Hab.* Angola. St. Paul de Lolanda.

A male. St. Paul de Lolanda. Presented by Edmund Gabriel, Esq.

#### OSTEOLOGY.

Skull, young male. South Africa.

Skull and horns. South Africa.

\*Skull. S. Africa. From Mr. Warwick's Collection.

The specimen in the Museum of the London Missionary Society (No. 8 Blomfield Street, Moorfields, formerly in Austin Friars), Case 5, described by Colonel H. Smith under the name of *A. Platous*, is the size and has the horns and ears of an adult *C. Grimmia*, but differs in being paler, and having no dark colour on the nose or feet; but it is evidently much bleached. It has certainly no relation to the *C. sylvicultrix*, with which Colonel Smith was afterwards inclined to place it as a variety (see *Griff. A. K. Syn.* v. 344).

There are three species which have been called *Antilope Grimmia* :—

1. The *Capra sylvestris africana* of N. Grimm, *Misc. Cur. Norimb.* 1705, 131. t. 13, the authority for *Capra Grimmii*, Ray, *Syn.* 80, and Linn. *S. N.* ed. 10. 70. *Moschus Grimmia*, Linn. *S. N.* ed. 12, from the Cape, of a dull grey colour. Probably the Duyker.

2. *Le Grimme* of Buffon, *H. N.* xii. 307. 329. t. 41. f. 2, 3, from a head sent from Senegal by Adanson; the *Antilope Grimmia* of Desmarest, F. Cuvier, and H. Smith, &c.; the *Cephalophus rufilatus*.

3. The *A. Grimmia* of Pallas, with large ears and a black streak to the horns, like *C. Campbelliæ*, but is from Guinea. I know of no species common to the W. and S. coast of Africa, so that it is probably yet to be distinguished.

The "*Fitomba*" or "*Philantomba*" appears to be the generic name of all the W. African *Cephalophi* or Bush Antelopes.

### 3. CEPHALOPHUS CAMPBELLIÆ. The BLACK-FACED PHILANTOMBA.

Grey and black grised, beneath white. Cheeks, neck and chest yellowish. Forehead yellow, with a black streak on the nose, widening on the forehead, and ending in a tuft of hair behind the horns. Feet and front of the fore legs reddish black. Fur soft. Hair grey, with a black ring and tips. Ears elongate, acute.

*Cephalophus Campbelliæ*, Gray, *Ann. & Mag. N. H.* 1846, 164; *Knowsley Menag.* 9; *Proc. Zool. Soc.* 1850, 121; *Sundevall, Pecora*, 133.

*Sylvicapra mergens* var., *Sundevall, Pecora*, 133.

*Cephalophus Burchellii* var. (*C. Campbelliæ*), Gray, *Cat. Mamm. B. M.* 162.

? *Antelope Grimmia*, Pallas, *Misc. i. t. 1*; *Spic. Zool. i. 38. t. 3. t. 4. f. 3, xii. 18*; *Fischer, Syn.* 468?

? *Le Grimme*, Buffon, *H. N. Supp. iii. t. 14*, from Pallas.

*Antelope mergens* var. *Burchellii*, part., *Sundevall, Pecora.*

*Hab.* W. Africa.

Adult female. S. Africa. Stockholm Museum.

A young specimen, with the streak up the face to the back of the forehead. Sierra Leone. Presented by Mrs. A. George Campbell.

*Antelope Campbelliæ*, Gray, *MSS. in List Mamm. B. M.* 162.

*Cephalophorus Burchellii*, jun., Gray, *List Mamm. B. M.* 162.

This species differs from the *Duyker* by being much darker, and more distinctly grised or dotted, and the under side being much whiter. It may be only a darker variety of that species.

The adult female was sent as *A. mergens*, var. *Burchellii*, by M. Sundevall (the other specimen of the same name being a true *Duyker*). The young specimen, which has been in the British Museum for several years, was sent from Africa, under the generic name of *Philantomba*, by Mrs. Ambrose George Campbell.

The *A. Grimmia* of Pallas, *Spic. Zool. i. 18. t. 3*, which he describes as grey grised, becoming brownish ash on the buttocks; throat, chest and beneath the body white; head and neck yellowish grey; a black streak between the horns, forming a

fascia on the forehead and broader on the nose; fur softer than the Deer, but rough, of lower part of the neck rougher and more lax; feet and line on fore-legs blackish; tail black above; ears rather acute: inhabits Guinea; agrees in most respects with this species, but most probably is yet to be procured from W. Africa.

#### OSTEOLOGY.

\*A skull. South Africa; Port Natal. From Stockholm Museum.

#### 4. CEPHALOPHUS BURCHELLII. BURCHELL'S BUSH BOB.

Fur reddish brown, very slightly black punctated. Face redder. Throat, chest, legs and belly rather greyer brown. Middle of the chin, inner side of the thighs, and under side of the end of the tail, whitish. Short streak up the nose and the front of the legs black. Skull large, elongate. The intermaxillary not reaching to the nasal. The suborbital pit very large, rather shallow. Nasal hole large, swelling out on the side.

Antelope (*Cephalophus*) *Burchellii*, *A. Smith, Griffith A. K.* iv. , v. 844?; *Fischer, Syn.* 635.

*Cephalophorus mergens*, *Gray, List Mamm. B. M.* 162.

*Cephalophus grimmia* var., *Gray, Ann. & Mag. N. H.* 1846, 164; *Knowsley Menag.; Proc. Zool. Soc.* 1850.

*Hab.* S. Africa.

A small male (wants cover of horns; hair of body rather elongate). South Africa.

Young. South Africa. From M. Verreaux' Collection.

A large female (hair shorter, adpressed). S. Africa.

Inhabiting the district more or less densely covered with underwood in Caffreland and the country north of the Orange River. When interrupted in feeding, or pursued by dogs, it springs with considerable activity over such bushes as may stand in its course, and endeavours to plunge into the closest thickets for concealment; hence they are called *Duiker bok*.—*A. Smith.*

#### OSTEOLOGY.

\*Skull of female. Port Natal. From Stockholm Museum.

?Skull and horns. S. Africa. Presented by W. Burchell, Esq., LL.D.

Skull of specimen described *Burchell, Travels*, ii. 337, and *A. Smith, G. A. K.* iv., as *A. Burchellii*.

This species is easily known from either *C. Grimmia* or *C. Campbellii* by its darker colour, and by the under sides and inside of the legs being nearly of the same colour as the back, and not white, as in those species, and also by the shortness of the in-

termaxillary and the width of the nose-hole. There has been a great difficulty about the determination of the species which Col. Hamilton Smith intended under the above name. The imperfect skin which Col. Smith described having lost its hair, has perished, and the skull alone has been preserved. This skull exactly agrees with the skull of the species above described in all its more important characters, but is rather smaller in size; and the colour of the fur best agrees with Col. Smith's description, for he observes that the animal is more ashy beneath, while *A. Platous*, *A. Ptoon* and *A. mergens* are described as white or whitish beneath.

\*\*\* *Knees not tufted. Ears moderate, acute. Horns short, conical, thick.*

#### 5. CEPHALOPHUS MADOQUA. The ABYSSINIAN BUSH GOAT.

Yellowish brown, slightly punctulated with black. Neck yellowish. Limbs blacker. Face-streak and feet black. Hair rather rigid, close-pressed, reddish grey at the base; upper part polished, yellow brown with dark tips. Forehead reddish.

*Antilope Madoqua, Rüppell, Faun. Abyss. t. 7. f. 2.*

*Cephalophus coronatus*, part., *Gray, Ann. & Mag. N. H.* 1846, 164.

*Cephalophus Madoqua, Gray, Knowsley Menag.* 9; *Proc. Zool. Soc.* 1850, 121.

*Madoqua, Bruce, Travels*, vii. 360. t. 56.

*Tragelaphus Madoqua, Rüppell, Verz. Senck.* 181.

*Sylvicapra Madoqua, Sundevall, Pecora*, 66.

*Hab. Abyssinia. Mus. Frankfort.*

This species is very distinct from *C. coronatus*, being darker, and the fur more rigid and close-pressed.

#### 6. CEPHALOPHUS CORONATUS. The COQUETOON or RED-CROWNED BUSH BUCK.

Pale yellowish brown. Middle of the back and front of fore legs varied, with a few scattered black hairs. Crown light bay. Crest blackish brown, bay in front. Feet and streak up the nose blackish. Inside of ears, chin, throat, chest, belly, and inner side of the legs, whitish. Tip of tail black. Horns short, conical. Ears acute, about half as long as the head.

*Cephalophorus coronatus, Gray, Ann. & Mag. N. H. x.* 1842, 266;

*Sundevall, Pecora*, 67; *Gray, Ann. Nat. Hist.* 1846, 164;

*Knowsley Menag.* 9. t. 6. f. 12; *Proc. Zool. Soc.* 1850, 122.

*Sylvicapra coronata, Sundevall, Pecora*, 133.

*Hab. W. Africa; Gambia; Macarthy's Island: called Coquatoon.*



Adult, stuffed. West Africa. Gambia. Presented by the Earl of Derby.

Female, adult.

Young: brighter coloured; streak on nape more distinct; tip of tail black.

#### OSTEOLOGY.

Skull, adult male. West Africa. Presented by the Earl of Derby.

Skull, young male. Gambia. Presented by the Earl of Derby.

Two skulls, young. Gambia. Presented by the Earl of Derby.

\*\*\*\* *Knees not tufted. Ears moderate, rounded. Horns conical, thick, without any streak over the eye.*

#### 7. CEPHALOPHUS SYLVICULTRIX. The WHITE-BACKED BUSH BUCK.

Blackish brown, minutely grey grised. Hair brown, with whitish tips. Back with a large yellowish white spot, narrow in front. Throat, chest and belly redder. Crown, nape and legs darker. Horns —? Varies in the size of the dorsal spots.

Antelope sylvicultrix, *Afzel. Nov. Act. Upsal.* vii. 265. t. 8, 1811.

A. Cervicapra sylvicultrix, *Desm. Mam.* 462; *Fischer, Syn.* 467. 654.

A. Cephalophus sylvicultrix, *H. Smith, Griffith A. K.* iv. 258. t. 187, v. 846.

Cephalophorus sylvicultrix, *Gray, Ann. & Mag. N. H.* 1846, 165.

Cephalophus sylvicultrix, *Knowsley Menag.* 10. t. 23. f. 3, t. 8. f. 1; *Proc. Zool. Soc.* 1850, 120.

Sylvicapra sylvicultrix, *Sundevall, Pecora*, 67.

Bush Goat, *Colonists, Sierra Leone.*

*Hab.* Sierra Leone, in swampy places.

A young male. Sierra Leone. Presented by the Earl of Derby.

#### 8. CEPHALOPHUS OGILBII. The BLACK-STRIPED BUSH BUCK.

Pale bay brown, with a deep black dorsal streak, beneath pale. Crown and haunches brighter bay. Neck, withers and side of the dorsal line varied with deep brown hairs. Streak up the fore-legs, upper part of hock, feet above the hoofs, and end of tail, black. Horns short, thick, conical, very rugose on the inner front edge of the base.

Antelope Ogilbii, *Waterhouse, Proc. Z. S.* 1838, 60; 1842, 129.

Cephalophorus Ogilbyi, *Gray, List Mamm. B. M.* 163.

Cephalophus Ogilbii, *Gray, Ann. & Mag. N. H.* 1842, x. 267;

1846, 165; *Knowsley Menag.* 10. t. 8. f. 2; *Proc. Zool. Soc.* 1850, 120; *Frazer, Zool. Typica*, t.

A. *Tragelaphus Ogilbyi*, *Lesson, Nov. Tab. R. A.* 181.

*Sylvicapra Ogilbii*, *Sundevall, Pecora*, 67.

*Hab.* Fernando Po.

A male (one horn wanting). Fernando Po. Presented by Thomas Thomson, Esq., R.N.

#### 9. CEPHALOPHUS BADIUS. The BAY BUSH BUCK.

Bright yellowish brown. Hair adpressed, flattened. Crown, nape, broad well-defined dorsal streak, and upper part of tail, black. Legs blackish grey. Spot over orbits, lips, chin and gullet, whitish. Head very large. Skull broad. Forehead rounded. *Cephalophus dorsalis*, *Gray, Knowsley Menag.* t. 7. f. 1, not description.

*Hab.* Sierra Leone.

Young male. Sierra Leone; Waterloo. Presented by the Earl of Derby.

#### OSTEOLOGY.

Skull. Sierra Leone. Presented by the Earl of Derby.

Very like *C. Ogilbii*, but darker bay; the legs are blackish; and the neck bright bay and not blackish grey, as in that species.

#### 10. CEPHALOPHUS DORSALIS. The BAY BUSH GOAT.

Dark bay; shoulders and legs darker. Hair brown; a few on the haunches white-tipped. Crown and nape, a broad dorsal streak to tail, black. A spot over each eye, the lips, sides of chin, front of chest, under side of tail, and inside of the thighs, pale brown.

*Cephalophus dorsalis*, *Gray, Ann. & Mag. N. H.* 1846, 165; *Knowsley Menag.* 10 (not fig. t. 7. f. 1); *Proc. Z. Soc.* 1850, 123; *Sundevall, Pecora*, 134.

Bush Goat, *Colonists*.

*Hab.* Sierra Leone.

A young male. Sierra Leone. From Surrey Zool. Gardens.

#### 11. CEPHALOPHUS NIGER. The BLACK BUSH BUCK.

Sooty black; greyer in front half of body. Chin, throat, abdomen, and inside of the thighs, grey. Forehead and crown dark bay and black mixed. Cheek pale brown, black varied. Tail, end whitish.

*Cephalophus niger*, *Gray, Ann. & Mag. N. H.* 1846, 165; *List*

*Osteol. Spec.* 57; *Knowsley Menag.* 10. t. 7. f. 2; *Proc. Zool. Soc.* 1850, 123; *Sundevall, Pecora*, 134.

*Antilope niger*, *Temm. Mus. Leyden*.

*Hab.* Guinea.

A male, half-grown. Coast of Guinea. From Leyden Museum.

**OSTEOLOGY.** Leg-bones, imperfect.

**12. CEPHALOPHUS NATALENSIS.** The NATAL BUSH BUCK or RHODE BOK.

Bright red bay. Nape, withers and feet varied with dark grey hairs. Nose-streak short, blackish. Lips, chin, upper part of throat, and end of tail, whitish. Lower part of cheek, throat and abdomen, pale yellowish. Crown and tuft bright red. Horns short, conical.

*Antilope Natalensis*, *A. Smith, S. African Quart. Journ.* 217; *Illust. Zool. S. Africa*, t. 32.

*Cephalophorus Natalensis*, *Gray, List Mamm. B. M.* 167.

*Cephalophus Natalensis*, *Gray, Ann. & Mag. N. H.* 1846, 165; *Knowsley Menag.* 10.

*Sylvicapra Natalensis*, *Sundevall, Pecora*, 66.

*Hab.* S. Africa; Port Natal.

Male and two females. Port Natal. From Dr. Krauss' Collection.

Female. Port Natal. From the South African Museum.

Male. Port Natal. From Mr. Williams's Collection.

**OSTEOLOGY.**

Skulls. Port Natal. From Mr. Warwick's Collection.

*A. Natalensis* inhabits the forests about Port Natal and country more to the eastward, living in thick brushwood which blocks up the intervals between the larger trees; they feed on grass, the young shoots of trees, and the more delicate twigs of the smaller shrubs. They take the place the *Little Blue Antelope* occupies at the Cape.—*A. Smith*.

**13. CEPHALOPHUS RUFILATUS.** The COQUETOON.

Deep reddish bay. Legs, nape, streak on the nose to the crown, and broad streak on back, blackish grey. Ears blackish. Crest and upper part of tail black. Cheeks rather paler. Chin and abdomen pale yellowish. Inside of ears whitish, with a brown spot on the outer side. Horns conical, rather elongate, obscure annulated, slightly recurved.

*Antilope (Cephalophus) Grimmia*, *H. Smith, G. A. K.* v. 266.

*Cephalophus rufilatus*, Gray, *Ann. & Mag. N. H.* 1846, 166;  
*List Osteol. B. M.* 56; *Knowsley Menag.* 10. t. 9; *Proc. Zool.*  
*Soc.* 1850, 123.

Le Grimme, *Buffon*, *H. N.* xii. t. 41. f. 2, 3.

*Var.* 1. Sides paler, greyish red; forehead rough.

Le Grimme (*Antilope Grimmia*), *F. Cuvier, Mam. Lithog.* t. ,  
not good (not separate head).

*Cephalophus rufilatus* var. 1, Gray, *Knowsley Menag.*; *Proc.*  
*Zool. Soc.* 1850, 124.

*Hab.* Sierra Leone.

Two females, young. Gambia. Presented by the Earl of Derby.

#### OSTEOLOGY.

?Grimme, *Daub. Buffon H. N.* xii. t. 41. f. 2, 3.

\*Skull. West Africa. Presented by the Earl of Derby.

\*Skull. Gambia. Presented by the Earl of Derby.

The hair is rather paler at the base, of the dorsal streak grey, with a blackish tip.

M. F. Cuvier's (*Mamm. Lithog.* t. ) figure is the pale variety, which Mr. Whitfield regards as distinct; he says it is called *Grimme* by the natives: the separate head of Cuvier's plate appears to have been taken from the *Guevei*.

\*\*\*\*\* *Knees not tufted. Ears moderate, rounded. Head with a pale streak on each side over the eyes to the base of the horns. Horns short, thick, conical. Guevei.*

#### 14. CEPHALOPHUS MAXWELLII. The GUEVEI.

Grey brown or sooty black. Sides of the head and body greyer. Chin, throat, chest and belly whitish grey. Abdomen and front of thighs white. Feet and end of nose rather darker. Fur rather rigid. Hair uniform. Broad streak over each eye to the base of the horns yellowish white.

*Antilope (Cephalophus) Maxwellii*, *H. Smith, G. A. K.* v. 852; *Fischer, Syn.* 637.

*Cervicapra Cephalophus Maxwellii*, *Gervais.*

*Cephalophus Maxwellii*, Gray, *Ann. & Mag. N. H.* 1846, 166;  
*Knowsley Menag.* 11.

*Antilope pygmea*, *Pallas, Spic. Zool.* xii. 18?

*Cephalophorus cæruleus*, part., Gray, *List Mamm. B. M.* 163.  
*Guevei*, *Buffon, H. N.*

*Guevei (Antilope pygmea)*, *F. Cuvier, Mam. Lithog.* t., good.

*La Grimme (separate head)*, *F. Cuvier, Mam. Lithog.* t.

*Antilope Fredericei*, *Laur.*

*Sylvicapra Frederici, Sundevall, Pecora*, 66. 133.

*A. monticola* var., *Thunb. Stockh. N. H.* xxxii.

*Antelope Philantomba, Ogilby, P. Z. Soc.* 1836, 121; 1839, 27.

*Chevrotain du Senegal, Buffon, H. N.* xii. 315. t. 43. f. 2, horns.

*Petite bisches, Adans. Seneg.* 114.

*Royal Antelope, Penn. Syn.* 28; *Quad.* i. 82.

*Pygmy Antelope, Shaw, Zool.* ii. 326. t. 188.

*Guevei, Guinea.*

*Hab.* West Africa; Senegal; Gambia.

**Males** (horns large). W. Africa. Presented by the Earl of Derby.

**Half-grown**, bright. Sierra Leone. Presented by Col. Edward Sabine, R.E.

*A. Maxwellii, H. Smith, Griffith A. K.* v. 852?

*Cephalophorus cæruleus*, part., *Gray, List Mamm. B. M.* 163.

# 15. CEPHALOPHUS PYGMEA. The NOUMETZI OF CAPE GUEVEI.

Grey brown. Streak over the eye, legs, and outer part of thighs, rufous. Feet grey brown. Chin, chest, abdomen and under side of tail, and inside of ears, white. Fur soft, grey, with intermixed rather rigid black hairs.

*Antelope monticola, Thunb. Mem. Acad. Petersb.* iii. 315, 1811; *Stockh. N. H.* xxii. t. 5, 1811.

*Antelope Cephalophus cærulea, H. Smith, G. A. K.* v. 853; *Fischer, Syn.* 637; *Harris, Wild Anim. Afr.* t. 26.

*Blauwbokje, Dutch at Cape of Good Hope; Daniel, Scenery S. Africa*, t.

*Antelope (Cephalophus) perpusilla, H. Smith, G. A. K.* v. 854; *Fischer, Syn.* 637.

*Cephalophorus cæruleus, Gray, List Mamm. B. M.* 163.

*Capra pygmea, Linn. S. N.* ed. 10.

*Antelope pygmea, Schreb. Saugth.* 1237. t. 260 B.

*A. Gazella pygmea*, part., *Licht. Berl. Mag.* vi. 178; *Saugth.* t. 16, not *Pallas*; *Desm. Mam.* 465; *Fischer, Syn.* 469. 638.

*A. Cephalophus pygmea, H. Smith, G. A. K.* v. 856.

*A. Cervicapra pygmea, Blainv. B. S. Phil.* 1816, 75.

*Tragulius pygmeus, Ogilby, Proc. Zool. Soc.* 1836, 138.

*Sylvicapra pygmea, Sundevall, Pecora*, 66. 122.

? *Antelope minuta, Forster, MSS.*

*Cephalophus monticolus, Gray, List Skelet. B. M.* 57.

*Tragelaphus pygmeus, Rüppell, Verz. Senck.* 181.

*Cervus juvenis perpusillus, Seba, Thes.* i. 70. t. 43. f. 5.

*Hab.* South Africa.

A male. South Africa.

A young male, brighter. South Africa. From M. Verreaux' Collection.

A female (one horn deficient), larger. South Africa.

ANAT. Skeleton.

16. **CEPHALOPHUS MELANORHEUS.** The BLACK-RUMPED GUEVEI.

Grey brown. Throat and sides paler. Rump and upper part of tail black. Chin, chest, abdomen, back and front edge of thighs, and under part of tail, white. Narrow streak over the eyes whitish. Feet like back. Fur soft, pale grey, with intermixed rather rigid black hairs.

*Cephalophus melanorheus*, Gray, *Ann. & Mag. N. H.* 1846, 166; *Knowsley Menag.* 11. t. 10; *Sundevall, Pecora*, 134.

*Cephalophorus Philantomba* (The Guevi), Gray, *Cat. Mam. B. M.* 163, not *H. Smith*.

*Hab.* Fernando Po.

Male and two females. Fernando Po. Presented by Thomas Thomson, Esq., R.N.

*Note.*—Antelope (*Cephalophus*) *Philantomba*, *H. Smith, G. A. K.* v. 855; *Fischer, Syn.* 637—appears to be a doubtful species.

17. **CEPHALOPHUS PUNCTULATUS.** The GRISLED GUEVEI.

Dark fulvous brown; sides and legs rather paler. Narrow streak over the eyes and inside of ears pale brown. Chin, throat, chest, belly, front of thighs, and under part of tail, white. Hair grey at the base, with brown ends and yellow subterminal rings. Crown and upper part of tail darker. Feet pale varied.

*Cephalophus punctulatus*, Gray, *Ann. & Mag. N. H.* 1846, 166; *Knowsley Menag.* t. 11. f. 1; not t. 8. f. 1, as quoted.

*Hab.* Sierra Leone.

A young specimen (female?). Sierra Leone. Presented by Capt. Sabine.

18. **CEPHALOPHUS WHITFIELDII.** The WHITE-FOOTED GUEVEI.

Yellowish ash. Shoulders, outside of limbs, and hinder part of back, rather darker. Ears and crown pale yellowish brown. Streak over the eyes, cheeks, throat, belly, inside of the limbs, and ring round the feet above the hoofs, ashy white. Hair ashy grey; of the back brown at the end, with a yellow tip.

*Cephalophus Whitfieldii*, Gray, *Knowsley Menag.* 12. t. 11. f. 2.  
*Hab.* W. Africa; Gambia.

A young specimen. Gambia. Presented by the Earl of Derby.

♂. *Crumen* none, no glandular streak on face. *Muffle* large, moist.  
*Crown* smooth.

#### 16. NANOTRAGUS.

Horns very short, conical. Crown not crested. Ears small, rounded. Tear-bag none. Legs slender. Tail subpectinate. Hoofs small, triangular. False hoofs none.

*Antilope* subgen. *Spinigera*, Lesson, *Nov. Tab. R. A.* 178, 1842, not described.

*Nanotragus*, Sundevall, *Pecora*, 67. 134; Gray, *Ann. & Mag. N. H.* 1846, 231; *Knowsley Menag.* 12.

*Neotragus*, sp., Wagner.

*Cephalophorus*, sp.?, Gray, *List Mamm. B. M.* 163.

*Tragulus*, sp., Klein, *Quad.* 22; Brisson, *R. A.* i. 65; not Gray, *Ant. spinigera*.

*Antilope*, sp., Pallas.

*Capra*, sp., Linn.

*Moschus*, sp., Linn. *S. N.* ed. 12. 92, 1766; *Erzleb.* 1788.

*Neotragus*, sp., H. Smith, *Griffith A. K.* v. 182.

#### 1. NANOTRAGUS PERPUSILLUS. The ROYAL ANTELOPE.

Fulvous. Throat, belly, edge of thigh and tip of tail, white.

*Capra perpusilla*, Linn. *Mus. Adolph. Fred.* i. 12, fide spec. Linn.  
*Cervus Guinensis*, Linn. *Mus. Adolph.* 12; *S. N.* (from Seba, t. 45. f. 1).

*Cervus stylocerus Guinensis*, Lesson, *Mamm.* x. 276.

*Cephalophorus*? pygmeus, Gray, *List Mamm. B. M.* 163.

*Antilope regia*, *Erzleb. Syst.* 278, from Buffon.

*Antilope spinigera*, Temm. *Menag. Mamm.* i. xxx. 1827; Fischer, *Syn.* 469; Wagner, *Sup.* 457.

*Nanotragus regius*, Sundevall, *Pecora*, 67; Gray, *Knowsley Menag.* 12.

*Antilope pygmea*, Pallas, *Spic. Zool.* xii. 18, from Buffon.

*Nanotragus spiniger*, Sundevall, *Pecora*, 67, 121.

*Moschus pygmeus*, Linn. *S. N.* i. 92 (see Sundevall, *Pecora* 116); Schreb. *Saugth.* 956. t. 244.

*Antilope Gazella pygmea*, Licht. *Berl. Mag.* vi. 178.

*Tragulus Guinensis*, Brisson, from Seba, t. 45. f. 1; Klein.

*Cerva parvula africana*, &c., Seba, *Thes.* i. 70. t. 43. f. 1-3 A, B.

- Hinnulus* s. *Cervus pergracilis*, *Seba, Thes. i. 70. t. 43. f. 2.*  
*Cervus africanus pilo rubro*, *Seba, Thes. i. 73. t. 45. f. 1.*  
 ? Klein Hirschen, &c., *Mus. Bareuth. 5. t. 5.*  
*Chevrotaïn d'Afrique*, *Buffon, H. N. xii. 310-341. t. 42. f. 2,*  
*horn, f. 3-6, feet.*  
*Royal Antelope, Penn. Syn.*  
*Guinea Musk, Penn. Syn. 59; Quad. i. 127.*  
*Pygmy Musk, Shaw, Zool. ii. 254.*  
*Antelope (Spinigera) spinigera, Lesson, Nov. Tab. R. A. 178.*  
*Hab. W. Africa; Guinea.*

A young specimen, stuffed, formerly in spirits, discoloured.  
 W. Africa; Guinea.

### 17. PELEA.

Horns conical, erect, slender, scarcely diverging, bent forward at the tip. Face narrow, elongate. Nose swollen. Muffle large, extended far behind the nostrils. Crumen none. Fur soft, woolly. Hoofs and false hoofs rather large. Inguinal pores distinct. Teats four.

*Hab. Africa.*

- Eleotragus*, § 1. *Pelea, Gray, Knowsley Menag.; Proc. Zool. Soc. 1849, 126.*  
*Tragelaphus*, sp., *Rüppell, Verz. Senck. 181.*  
*Eleotragus*, sp., *Gray, Ann. & Mag. N. H. 1846, 232; Turner, Proc. Zool. Soc. 1848.*  
*A. Gazella*, sp., *Licht. Berl. Mag. vi. 247, 1814.*

#### 1. PELEA CAPREOLA. The REHBOCK OF PEELE.

Head slender, compressed. Temple-spot none. Horns erect, scarcely diverging, very slender. Fur short, soft, woolly, grey brown. Back redder. Throat and beneath whiter. End of nose and chin blackish. Feet darker.

- Antelope (Gazella) Capreolus, Licht. Berl. Mag. vi. 147, 1814; Saugth. t. 8; Thunb. Afzel. Nov. Act. Upsal. vii. 257, 1816; Schreb. Saugth. 1230; Thunb. Mem. Petersb. iii. 312; Harris, W. A. Africa, t. 28. f. 1; Desm. Mam. 461; Fischer, Syn. 467.*  
*Eleotragus (Pelea) Capreolus, Gray, Ann. & Mag. N. H. 1846, 232; Knowsley Menag. t. 12; Proc. Zool. Soc. 1849, 126.*  
*Antelope lanata, Desmoul. Dict. Class. H. N. i. 445. t.*  
*Antelope villosa, Burchell, Travels, ii. 302, 1822.*  
*A. redunca villosa, H. Smith, G. A. K. v. 835.*  
*Rehbock, Dutch; Sparrm. Reise, 517.*  
*Eleotragus villosus, Gray, List Mamm. B. M. 165.*



*Eleotragus Capreolus*, Gray, *List Osteol. B. M.* 57.

*Tragelaphus Capreolus*, Rüppell, *Verz. Senck.* 181.

*Hab.* South Africa.

Male. S. Africa. Presented by W. Burchell, Esq., LL.D.

Female. S. Africa.

Young. S. Africa.

#### OSTEOLOGY.

Head and horns. South Africa. Presented by Dr. Burchell.

#### 18. ELEOTRAGUS.

Horns conical, thick, diverging, bent back and then bent forwards at the tip. Face broad. Nose not swollen. Muffle rather large. Crumen none. Fur harsh, of back more or less whorled. Hoofs and false hoofs rather large. Inguinal pores distinct. Teats four. Skull: "Nasal opening rather lengthened, the nasal processes of the intermaxillary bones long, yet not always reaching the nasal bones; a large infraorbital fissure, but no fossa; the masseteric ridge ascending rather high; the auditory bulla large and swollen; the basioccipital bone with its median groove and tubercles well developed; the median incisors expanded at their summits; a well-developed supplemental lobe in the first true molar of each jaw, and usually more or less appearance of it in those behind."—Turner.

*Hab.* Africa, in marshy places.

*Redunca*, sp., H. Smith, *Griffith A. K. v.*, 1827; Fischer, *Syn.* 624.

*Eleotragus* § 1, Gray, *Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 12.

*Eleotragus*, sp., Turner, *P. Z. S.* 1850.

*Cervicapra*, sp., Blainville, *Bull. Soc. Phil.* 1816.

*Cervicapra*,  $\alpha$  and  $\beta$ , Sundevall, *Pecora*, 60.

*Cervicapra b.* *Redunca*, sp., Gervais, *Supp. D. S. N. i.* 261, 1840.

*Nagor*, Laurillard.

*Sylvicapra*, Ogilby, *Proc. Zool. Soc.* 1836.

† *Fur* grised, harsh, straight, with a subterminal pale band, and often whorled. Head broad. Temple with a naked spot. Muffle large, flat, extending behind the nostrils. S. Africa.

#### 1. ELEOTRAGUS ARUNDINACEUS. INGHALLA or RIETBOCK.

Head broad. Temple-spot naked. Horns divergent, conical, tapering. Fur brown yellow, grised. Hair pale brown, with a

subterminal yellow band. Cheeks and neck yellower. Base of ears, chest, belly, inside of the legs, and under side of the bushy tail, white. Front of legs black. Hair of back forms a round or elongate whorl.

Antelope *arundinacea*, *Shaw*, *Zool.* ii. 347. t. 193, lower fig.; *Bechst.*

Antelope *Eleotragus*, *Schreb. Saugth.* 1225. t. 266.

*A. gazella* *Eleotragus*, *Licht. Berl. Mag.* vi. 173; *Saugth.* t. 9; *Thunb. Mem. Petersb.* iii. 314; *Desm. Mam.* 459; *Fischer, Syn.* 465. 633.

*A. redunca* *Eleotragus*, *H. Smith, G. A. K.* v. 832; *Harris, W. A. Africa*, t. 26.

*A. Cervicapra* *Eleotragus*, *Blainv. B. S. Phil.* 1816, 75.

*Eleotragus arundinacea*, *Gray, List Osteol. Spec. B. M.* 57.

*Antelope redunca*, *H. Smith, G. A. K.* v. 833.

*Eleotragus reduncus*, *Gray, List Mam. B. M.* 165.

*Eleotragus arundinaceus*, *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 12; *P. Zool. Soc.* 1849, 127; *Turner, P. Z. S.* 1848.

*Antelope cinerea*, *Afzelius, Nov. Act. Upsal.* vii. 244, 1815.

*Ritbock, Allam. Buff. H. N. Supp.* v. 34. t. 13, 14; vi. t. 31, 32; *Penn. Quad.* i. 81.

*Redunca* *Eleotragus*, *Rüppell, Verz. Senck.* 182, 1845.

*Cinereous* *Antelope*, *Penn. Syn.* 86.

♀ *Antelope Lalandia*, *Desmoul. Dict. Class. H. N.* i. 445.

*Antelope Lalandiana*, *Desmar. Mam.* 462.

*Antelope Lalandii*, *Fischer, Syn.* 467.

*Hab.* South Africa; Cape of Good Hope.

Female (hair in the front of the dorsal line twisted, face rather darker). S. Africa.

Female (hair of the dorsal line to the loins twisted). S. Africa.

Male and female, adult, stuffed. S. Africa.

Skull. S. Africa.

#### OSTEOLOGY.

\* Skull, female. South Africa.

Horns. South Africa.

Two skulls. S. Africa. Presented by W. Burchell, Esq., LL.D.

Horns. S. Africa. From Mr. Argent's Collection.

*Var.* 1. Larger.

*Antelope Isabellina*, *Afzel. Nov. Act. Upsal.* vii. 244, 1815; *Schreb. Saugth.* 27; *Licht. Saugth.* t. 10.

*A. redunca Isabellina*, *H. Smith, G. A. K.* v. 832.

*Cervicapra Isabellina*, Sundevall, *Pecora*, 70.

*Antelope Eleotragus*  $\gamma$ . *Isabellina*, Fischer, *Syn.* 435. 465.

*Var.* 2. With a large black rhombic spot on the back of the head behind the ears; female.—Gray in *Knowsley Menag.* 13.

Afzelius, Lichtenstein, H. Smith and Sundevall have described two species of this genus as coming from South Africa; the smaller they call *A. Eleotragus*, and the larger *A. Isabellina*. The latter author has given a comparative character between the two kinds, but he has only seen two specimens of the former (a male at Berlin and a female at Stockholm), and several specimens of the larger kind. I have examined with care a series consisting of four males and five females from different parts of South Africa, and can find no distinction between them, except a slight difference in the length of the fur and in its colour. Two specimens in the British Museum are larger than the rest, and have the tarsus one-fourth longer than the others; they have a shorter fur and are of a rather brighter colour, and the front of the leg is blacker; but the fur and colour probably depend on the season when they were killed. In these respects they agree with Sundevall's description of *A. Isabellina*, but they both have the temporal spot large and quite naked, while Prof. Sundevall described the spot on this species as pubescent. The female of the larger specimen has the black spot on the back of the head; some of the smaller ones have the temple-spot much smaller and less naked than the others. The two larger specimens have a single whorl of hair in the middle of the back; the others, with longer hair, show the whorls more distinctly, and have the hair from the central whorls to the shoulders forming a more or less diverging line. After examining these specimens and those in other collections, I conclude that they form only a single species. M. Sundevall, in a note just received, observes, "Mr. Wahlberg considers *A. Isabellina* and *A. Eleotragus* as very distinct, and our specimens seem to show a difference, though not very well expressed. Also I have committed a mistake, for the young female described in my *Synopsis* as  $\gamma$ . under *A. Isabellina* is really *A. Eleotragus*."

*Riet* or *Reed Bok* (*Eleotragus*) lives in reedy marshes, and in the grass of damp flats, in which it lies close until actually put up by the hunter or his dogs, and even then rarely running beyond musket range; hence it has been nearly exterminated near the colony.

The *Rooye Rhee Bok* inhabits the rugged slopes of high mountains, and the summits of those of less elevation, from the eastern district of the Cape colony to the Tropic of Capricorn, living in small herds.—Andrew Smith.

†† Fur not grised. Hair grey, yellow tipped. Head broad. Muzzle small, scarcely extending beyond the nostril behind. Tail only slightly bushy. N. and W. Africa.

## 2. ELEOTRAGUS REDUNCUS. The WONTO or NAGOR.

Head broad. Horns conical, thick at the base, diverging. Fulvous brown, rather pale on the sides. Hair soft, grey, yellow tipped, all in regular order. Chin, throat, spot under the ear and over the eye, inside of limbs, under side of tail and lower side of the body, white. Front of legs sometimes blackish.

*Antelope redunca*, Pallas, *Spic.* i. 8 (from Buffon, *Nagor*, xii. 13); Gmelin, *S. N.* i. 184.

*A. vera redunca*, Licht. *Berl. Mag.* vi. 170; Schreb. *Saughth.* 1200. t. 265.

*A. Cervicapra redunca*, Blainv. *B. S. Phil.* 1816, 75; Desm. *Mam.* 458; Fischer, *Syn.* 464. 631; Rüppell, *Abyss.* t. 7, good.

*A. rufa*, Afzelius, *Act. Holm.* 1815, 250, from Buffon.

*Eleotragus reduncus*, Gray, *Proc. Zool. Soc.* 1849, 127; Knowsley *Menag.* 13. t. 13.

*Antelope reversa*, Pallas, *Misc.* 5.

*Eleotragus reduncus*, Gray, *Ann. & Mag. N. H.* 1846, 232.

*Eleotragus isabellinus*, Gray, *List Mam. B. M.* 165.

*Nagor*, Buffon, *H. N.* xii. 326. t. 46? cop. *E. M.* t. 51. f. 2.

*Redunca Nagor*, Rüppell, *Verz. Senck. Samml.* 182, 1845.

*Red Antelope*, Penn. *Syn.* 30; *Quad.* i. 86; Shaw, *Zool.* ii. 360.

♀ Oureby, *F. Cuv. Mam. Lithog.* t.

*Hab.* W. Africa; Senegal; Gambia; called *Wonto*.

*Var.* 1. Larger, brighter coloured.

*Antelope Bohor*, Rüppell, *Faun. Abyss.* t. 7; Sundevall, *Pecora.*

*Eleotragus reduncus* var., Gray, *Knowsley Menag.* 13; *Proc. Zool. Soc.* 1849, 128.

*Redunca Bohor*, Rüppell, *Verz. Senck. Samml.* 182, 1845.

*Hab.* Abyssinia. Mus. Frankfort.

A male. W. Africa.

A male. W. Africa; Gambia.

A fawn. W. Africa; Gambia.

Pallas and Afzelius's account of this species is derived from Buffon's description; both he and Adanson (*Hist. Nat.* xii. 326) say that it is "all pale red," and Buffon further observes that it has not the white on the belly of the Gazelles. This does not agree with our animal, which is white in several parts, but certainly not so white as the Gazelle, and has black on the legs; but as yet no other animal has been brought from West Africa which better agrees with their account or figure.

M. Sundevall considers specimens of the *Nagor* of Senegal and the *Bohor* of Abyssinia, in the Frankfort Museum, as distinct, the former having the hair of the back whorled, the fore-leg with a dark stripe, and the latter having the hair not whorled and the legs pale. Our specimens, from Gambia, have the hair not whorled, and more or less distinct streaks on the fore-legs; hence I am inclined to believe the *Nagor* and the *Bohor* to be alike. Sundevall's animal may be the *Kob*, but that has only one whorl on each end of the back, a nearly cervine muffle, and the end of the tail black.

When in Frankfort, I observed that the male *Antilope Bohor*, from Abyssinia, was rather larger than the male of "*A. redunca*," from Senegal, in the same collection, and much brighter, and the horns more slender; the female was darker and browner than the male; both sexes have more black on the carpus and tarsus than the specimen of *A. redunca* in the same Museum.

*Note.*—*Antilope fulvo-rufula*, *Afzel. N. Act. Upsal.* vii. 289; *A. Eleotragus* var. *fulvo-rufula*, *Fischer, Syn.* 465; *Ritbock* var., *Allam. Buffon H. N. Supp.* v. 34; *Braunroth Antelope, Schreb. Saugth.* 1226—is a very doubtful species, if not the same as the former.

#### RAPHICERUS.

*Raphicerus (acuticornis)*, *H. Smith, Griffith A. K.* v. 842, 1822; *Fischer, Syn.* ii. 624.

Is a very doubtful genus. Colonel Hamilton Smith formed it for two pairs of horns on part of the frontal bones in the College of Surgeons, which he called *Raphicerus acuticornis* and *R. subulata* (*Griffith, A. K.* t. 181. f. 2. 1). The figures are not sufficient to identify the species, and we now know that the horns of the same species differ greatly in individuals of the same species, and during the growth of the same specimen. *R. acuticornis* may be the horns of the *Duyker Boc*, *Ceph. Grimmia*?

1. *Antilope Cervicapra acuticornis*, *Blainv. Bull. Soc. Phil.* 1816, 75-78; *Journ. Phys.* 1818, t. . f. ; *Isis*, 1819, t. 12. f. 3.

*A. Raphicerus acuticornis*, *H. Smith, Griffith A. K.* iv. 198. t., v. 842; *Desm. Mam.* 460; *Fischer, Syn.* 466. 633.

*Cephalophus Grimmia*?

*Hab.* —. *Skull Mus. Coll. Surg.*

2. *Antilope (Raphicerus) subulata*, *H. Smith, G. A. K.* iv. 198. t. 181. f. 1, 2, *skull*; v. 843; *Fischer, Syn.* 633.

*Hab.* —. *Skull.*

Cervine Antelopes. *Body rather heavy. Tail elongated, with short hair at the base, and a tuft of longer hair at the tip. Horns elongate. Generally of a large size.*

Cervine Antelopes (*Antilopæ Cervinæ*), *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 14; *Proc. Zool. Soc.* 1849, 128.

*a. Neck not maned.*

### 19. ADENOTA.

Muffle cervine, cordate, moderate. Nose hairy between and over the nostrils. Horns sublyrate, ringed; when young recurved. Tear-bag none, or covered by a tuft of hair. Hair of back whorled, of dorsal line and back of head reversed. Tail elongate, hairy.

*A. Gazella, sp., Blainv. Bull. Soc. Phil.* 1816, 75.

Antilope (*Antilope*), *sp., H. Smith, G. A. K. v.* ; *Fischer, Syn.* 624.

*Adenota, Gray, Knowsley Menag.* 14, 1849; *Proc. Zool. Soc.* 1849, 129.

This genus is very like *Eleotragus*, but has a smaller, more cervine muzzle and lyrate horns; it differs from *Kobus* in the form of the tail, and wanting the mane, and from both in having a tuft of hair in the front of the orbit.

*\* Horns short. Tail short, hairy.*

### 1. ADENOTA KOB. The ÆQUITOON.

Pale brown. End of nose, inside of ears, chest, belly, inside of legs and thighs, tip of tail, end band above hoofs, white. Front of fore and hind legs, and end of ears and tail, black. Hair of dorsal line reversed, with a whorl on the shoulder and loins.

Antilope Kob, *Erzl. Syst.* 293, from *Buffon*; *Desm. Mamm.* 457; *Fischer, Syn.* 463; *Ogilby, P. Z. S.* 1836.

*A. Gazella Kob, Blainv. Bull. S. Phil.* 1816, 75.

*A. Antilope adenota, H. Smith, G. A. K. iv.* 224. t. 184, t. 183. f. 3, 4, horns? v. 828; *Fischer, Syn.* 626, not *Syn.*

*Antilope defassa jun., Rüppell.*

*Kob, Buffon, H. N. xii.* 210. 267. t. 32. f. 1, skull.

*Gambian Antelope, Penn. Syn.* 39; *Shaw, Zool.* ii. 338, from *Buffon*.

*Kobus Adansonii, A. Smith, S. African Quart. Journ.* , from *Buffon*.

Antelope annulipes, Gray, *Ann. & Mag. Nat. Hist.* 1843, x. 267.

Antelope Kob, Ogilby, *Proc. Zool. Soc.* 1836, 103.

Adenota Kob, Gray, *Knowsley Menag.* 14. t. 14, 15; *Proc. Zool. Soc.* 1849, 129.

Petit Vache brune, Adanson, *MSS.*

Kob, *Mandingoes.*

Æquitoon, *Ioliffs.*

*Hab.* West Africa; Gambia.

*Var.?* Hair longer; sides of face whitish. A female.

Kolus Sing-Sing, Gray, *List Mam. B. M.* 159 (not Bennett).

Adenota Kob, var., Gray, *Knowsley Menag.* 14; *Proc. Zool. Soc.* 1849, 129.

Antelope Koba, Ogilby, *Penny Ency.* fig.

*Hab.* E. Africa.

Female. E. Africa. Presented by Edward Cross, Esq. (Figured by Mr. Ogilby in the *Penny Ency.* as *A. Koba.*)

Half-grown male. Gambia. Presented by the Earl of Derby.

Female and young. Gambia. Presented by the Earl of Derby.

#### OSTEOLOGY.

Skull, male. Gambia. Presented by the Earl of Derby.

Skull, young. Gambia. Presented by the Earl of Derby.

Kob, *Daub. H. N.* xii. t. 32. f. 1.

Mr. Gray observes, "A fine pair has been at Knowsley some years. Thinking them new, I described them as *A. annulipes*. Mr. Ogilby has called it the *Nagor*, but it is scarcely the *Nagor* of Buffon. An adult male noticed by Mr. Ogilby as the *Kob* is now in the Museum of the Zoological Society; its horns, like the male at Knowsley, are much worn down. They whistle like a stag.

"Buffon (*H. N.* xii. 219. 267. t. 32. f. 1) figures a skull with horns, brought from Senegal by Adanson, under the name of *Kob*, which is also called the *Petit Vache brune*. Erxleben gave this figure the name of *A. Kob*, and Pennant called it the *Gambian Antelope*, *Syn.* i. 39. The figures somewhat resemble the head of a half-grown male of this species, but the horns are longer, and have more rings than the specimen in the British Museum; but I am inclined to agree with Mr. Ogilby in believing that it was intended for this species. In the *Jardin des Plantes* they called the Sing-Sing the *Kob* of Senegal; this may be a mistake for the *Koba*. I may remark that the horns of the *Koba* in the same plate of Buffon are represented with more rings than are mentioned in the description.

"Colonel Hamilton Smith describes and figures a male and female specimen which were alive in Exeter Change, and figures

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the male and its skull and horns under the name of *A. adenota*, which well agrees with this species, and has the peculiar distribution of its hair; hence its name: but he says, it has 'a long open suborbital slit, and small black brushes on the knees;' but this I suspect must be a mistake, as he himself observes that no lacrymal cavity was found in the skull. He might have mistaken the tuft of hair for the gland at the distance at which he saw the specimens. He also (*G. A. K.* iv. 221) described a specimen which was in Exeter Change, which he regarded as the *Gambian Antelope* of Pennant, and calls *A. forfex*. His characters agree in most particulars with this species, but he says it had 'a long lacrymal sinus, and had small brushes on the knees.' If there was not some mistake in transcribing these descriptions, both these animals should be *Gazellas*, but I have never seen any which agreed with them.

"The young male in the British Museum shows the development of the horns of these animals. The upper rings of the growing horn fall off in large thick flakes as the horn increases in size beneath: this explains how the extent of the smooth tapering part of the horns increases in length as the horn grows, and how the number of rings are found to be nearly the same in the various ages, and different individuals of the various species. Mr. Whitfield informs me that the scrotum is rarely developed or dependent externally in different kinds of Antelopes before they have completed their first year."

The Antelope (Antelope) *forfex*, *H. Smith, Griffith A. K.* iv. 221, v. 827; *Fischer, Syn. Mam.* 627; which has been compared with this species, is perhaps a young *Gazella*.

**\*\* Horns elongate, recurved at the tip. Tail slender, tufted at the end.**

## 2. ADENOTA LECHÉE. The LECHÉE.

Pale brown. Orbit and lower part of body whitish. Front of legs dark brown. Horns elongated, strongly nodose in front. Withers with a small roundish whorl of hair.

Lechee, *Oswell, Journ. Roy. Geogr. Soc.* xx. 150, 1850.

Eleotragus, sp., *Turner, Proc. Zool. Soc.* 1848.

Kobus Lechée, *Knowsley Menag.* 23, 1849.

Adenota Lechée, *Gray, Proc. Zool. Soc.* 1849, 130.

*Hab.* South Africa; banks of river Zouga, lat. 22° S.

A male. S. Africa; banks of the river Zouga, lat. 21°. Presented by Capt. Frank Vardon, Madras Army.

This animal is nearly as large as the *Water Buck*. The horns



are very like those of that animal; the neck is covered with short adpressed hair, and has no appearance of a mane.

*b. Neck maned on the sides.*

20. KOBUS.

Horns elongate, sublyrate, bent back and then forwards at the tip. Muffle cervine. Tear-bag none. Inguinal pores none. Hair rough, elongate. Neck covered with longer diverging and drooping hair. Tail rather elongated, depressed, hairy on the sides and below. *Females* hornless. Teats 4.

Kobus, *H. Smith in Griffith A. K.* v.; *Gray, Ann. & Mag. N.*

*H.* 1846, 232; *Knowsley Menag.* 15; *Proc. Zool. Soc.* 1849, 130.

Kolus, *A. Smith, Ill. Zool. S. Africa*; *Gray.*

*Cervicapra*, sp., *Sundevall.*

*Eleotragus*, sp., *Turner, Proc. Zool. Soc.* 1848.

*Ægocerus*, sp., *Harris, Wild Animals Africa*; *Lesson.*

*Ægocerus*, sp., et *Neotragus*, sp., *Lesson, Nov. Tab. R. A.* 178.

1. KOBUS ELLIPSIPRYMNUS. PHOTOMOK OR WATER BUCK.

Brownish. Rump with a whitish elliptical ring near the base of the tail. Horns converging at the tip.

Antelope ellipsiprymna, *Ogilby, P. Z. S.* 1833, 47; *Harris, W. Anim. Africa*, t. 14.

Kolus ellipsiprymnos, *A. Smith, Illust. Zool. S. A.* t. 28, 29.

Kolus ellipsiprymnus, *Gray, List Mam. B. M.* 159.

Kobus ellipsiprymnus, *Gray, Ann. & Mag. N. H.* 1846, 232;

*Knowsley Menag.* 15; *Proc. Zool. Soc.* 1849, 130.

*A. Ægocerus ellipsiprymnus, Lesson, Nov. Tab. R. A.* 179.

Antelope Kemas?, *H. Smith, Griffith A. K.* iv. t. 181. f. 6, horns. *Hab.* South Africa.

Male. S. Africa. From the South African Museum.

Female. S. Africa. Presented by the Earl of Derby.

OSTEOLOGY.

Skull and horns. S. Africa. From Mr. Argent's Collection.

Horns. S. Africa. From Mr. Warwick's Collection.

The *Water Buck* lives in small herds on the banks of rivers, and has not occurred south of 26°. It is very timid, rushing into and crossing rapid rivers when alarmed. The flesh is not esteemed as food, having a rank, pungent smell, but the taste is less so.

2. KOBUS SING-SING. The SING-SING.

Rump without any pale ring. Reddish or yellowish grey

brown, rather greyer on the shoulders. Nose, lips, hinder parts of the thighs, under the neck, from the ears to the gullet, a streak over each eye, and ring above the hoofs and false hoofs, white. Belly and legs blacker. End of tail and legs, from shoulder to hough, black. *Females* greyer. Belly and upper part of legs paler.

Antilope Sing-Sing, *Bennett, Rep. Zool. Soc.; Waterhouse, Cat. Zool. Soc. Mus.* 41. n. 378.

Antilope defassa, *Rüppell, Faun. Abyss.* t. 3.

Redunca defassa, *Rüppell, Verz. Senck. Samml.* 1822, 1845.

Antilope unctuosus, *Laurillard, D'Orb. Dict. Univ. H. N. i.* t. 622 ♂, good.

A. Neotragus unctuosus, *Lesson, Nov. Tab. R. A.* 178, 1842.

Antilope Koba, *Ogilby, Penny Ency.* ii. 79 f. ♀; *Proc. Zool. Soc.* 1836, not *Eral*.

? Koba, *Buffon, H. N.* xii. 210. 267. t. 32. f. 2, horn? (more probably *Damalis pygarga*?).

? Senegal Antelope (part.), *Pennant, Syn.* 38, part. from *Buffon* only.

*Hab.* W. Africa.

Female, adult. Gambia. Presented by the Earl of Derby.

Male, young. Gambia. Presented by the Earl of Derby.

#### OSTEOLOGY.

Skeleton, male, young. Gambia. Presented by the Earl of Derby.

Skull, female, adult. Gambia. Presented by the Earl of Derby.

Skull, female, young. Gambia. Presented by the Earl of Derby.

This species varies much in the tint of the colouring, and in the length of the hair in the different seasons. In summer they are covered with very short, closely pressed fur, letting the skin be seen between the hairs. In the cold weather, and in England, the fur is longer and more abundant. The hair of the chin and neck is long and rigid in all seasons, and even in the young animals. The tail of the adult specimen is cylindrical and nearly bald, ending in a tuft of black hair; in the young specimens, especially in the winter fur, the base of the tail is fringed with hair on each side. The male is much brighter-coloured, and the chest and belly are nearly black, like the legs. The hinder parts of the rump of the young animals are greyish white; in the older specimens it becomes pure white and broader in extent.

This animal is called *Sing-Sing* by all the negroes. They do not think their flocks of cattle will be healthy or fruitful unless they have one of the Sing-Sings accompanying them, as some persons think a Goat necessary to be in a stable in England. The English on the Gambia call it the *Jackass Deer* from its ap-

pearance, and it is called *Koba* and *Kassimause* by the negroes at Macarthy's Island. Its flesh is very strong, unpleasant, and scarcely palatable.

As far as I could judge by my recollection and description, the adult specimen at Knowsley, the young male and adult female in the British Museum, the male and female at Frankfort, and the adult male in the Paris menageries, are the same species.

Buffon figured (*Hist. Nat.* 210, 267. xii. t. 32. f. 2) under the name of *Koba* a pair of horns which were in the library of St. Victor at Paris. He described them as larger and more curved above than those of the *Kob*, eighteen inches long, and five inches in circumference at the base, and he refers them to an animal which Adanson says is called *Koba* in Senegal, and the *Great Brown Cow* by the French colonists. Pallas refers these horns to *A. Pygargus*, and the figures and description agree in many particulars with the horns of that species; but they are rather longer, and have more rings. Pennant (*Syn. Mam.* 38) gave the name of *Senegal Antelope* to Buffon's short account and figure, but has added to it the description and the figure of the head of a skin which came from Amsterdam, and appears to be *A. Caama* of South Africa. Cuvier (*Dict. Sci. Nat.* ii. 235) only translated Pennant's name to *A. Senegalensis*. Erxleben (*Syn.* 293) and Zimmerman (*Zool.* 345) have translated Pennant's description of his skin from Amsterdam of *A. Caama*, and called it *A. Koba*, referring to Buffon's description and Daubenton's figure. Fischer, Hamilton Smith and M. Sundevall regard the *Koba* of Buffon the same as the *Korrigum* of Denham and Clapperton, but the horns of that species are considerably longer and much thicker at the base than those described by Daubenton, and the annulations of the horns are higher and more regular. It should be remarked that Buffon describes his horns as having eleven or twelve rings, but figures them as having seventeen or eighteen. Mr. Ogilby (*Penny Cyclopædia* and the *Proceedings of the Zoological Society*) considers Buffon's *Koba* to be the *Sing-Sing*; in the length of the horns, and in the number, disposition and form of the rings, his figure more nearly agrees with the horns of that species than of that of the *A. Pygarga*, to which Pallas first referred it; but the horns are represented much more lyrate than any horns of the *Sing-Sing* I have seen; indeed, not one of the specimens which have come under my observation have had any inclination to assume that form: but as this is the only Western-African species which in any way agrees with Buffon's figure, perhaps it is best to adopt Mr. Ogilby's suggestion. The name of *Koba* or *Kob* appears to be common to many species. Schinz erroneously considers *Damalis Senegalensis*, *Antelope adenota* and *A. forfex* (H. Smith) as synonyms of this species.

c. *Nape with an erect, recurved mane.*

## 21. *ÆGOCERUS.*

Horns conical, elongate, recurved, rather compressed, ringed, arising immediately above the orbits. Nape with a linear, erect, reversed mane. Tear-bag covered with a tuft of hair. *Female* horned. Teats 2. *Skull* with "a small suborbital fissure, but no fossa; the masseteric ridge ascending high before the orbit; the auditory bulla moderate; the occipital portion of the skull much prolonged; the basioccipital portion widened, its two pairs of tubercles much developed, with a deep groove between them; the incisors gradually increasing in size to the median pair, which are not expanded at their summits; the molars with largely-developed supplemental lobes."

*Ægocerus*, sp., *H. Smith, Griffith A. K.* v. , 1827; *Fischer, Syn.* 623; *Turner, P. Z. S.* 1850, not *Pallas*.

*Aigoceros*, *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 16; *Proc. Zool. Soc.* 1849, 132.

*Ægocerus*, *Desmar. Mamm.* 475.

*Oryx*, sp., *Blainv. Bull. Sci. Phil.* 1816; *Ogilby, P. Z. S.* 1836, 139.

*Hippotragus*, *Sundevall, Pecora*, 72.

*Bubalides*, sp., *Licht. Berl. Mag.* vi. 159, 1814.

### 1. *ÆGOCERUS LEUCOPHÆUS.* The ETAAC OR BLAUBOC.

Glaucous grey.

*Capra cærulea*, *Kolbe, Cap.* i. 141.

*Antilope Leucophea*, *Pallas, Misc.* 4; *Spic. Z.* i. 6, xii. 1; *Eral. Syst.* 271; *Gmelin, S. N.* i. 182; *Schreb. Saughth.* i. 183. t. 278.

*A. Bubalides Leucophea*, *Licht. Berl. Mag.* vi. 159; *Thunb. Act. Petersb.* iii. 314.

*A. Oryx Leucophea*, *Blainv. B. S. Phil.* 1816, 75; *Desm. Mam.* 475.

*A. Ægocerus Leucophæa*, *H. Smith, G. A. K.* v. 510; *Fischer, Syn.* 480, 646.

*Ægocerus leucophæus*, *Gray, List Mamm. B. M.* 158; *Cat. Osteol. Spec. B. M.* 58; *Turner, P. Z. S.* 1848.

*Antilope Equina*, *Geoff. Cat. Mus. Par. in Cuvier R. A.* i. 263; *Dict. Sci. Nat.* ii. 446. t. . f. .

*B. Oryx Equina*, *Blainv. B. S. Phil.* 1816, 75; *Desm. Mam.* 476; *Desmoulin, Dict. Class. H. N.* vi. 446. t., head; *Fischer, Syn.* 480, 645.

*A. Ægocerus Equina*, *H. Smith, G. A. K.* iv. 177. t., v. 811.

*Aigocerus Equina*, *Gray, Knowsley Menag.* 16.

*Antilope aurita*, *Burchell, MSS.*, fide *H. Smith*.

- Antilope Osanne, *I. Geoff. Dict. Sci. Nat.* t.  
 Antilope glauca, *Forster, MSS.*  
 Oryx Leucophea, *Ogilby, P. Z. S.* 1836, 137.  
 Blau bock, *Licht. Reise*, ii. 121.  
 Blaue bocke, *Kolbe, Vorgeb.* 141.  
 Blue Antelope, *Penn. Syn.* 24. fig. head, 29; *Shaw, Zool.* ii. 355.  
 t. 193.  
 Tzeiran, *Buff. H. N.* xiii. 271. t. 31. f. 6, horn; *Supp.* vi. 168.  
 t. 20.  
 Blauw Bock, *Dutch at Cape.*  
 Antilope Truteri, *Fischer, Syn.* 478, 644.  
 Antilope (*Ægocerus*) barbata, *H. Smith, Griffith A. K.* v. 813.  
 Capra Æthiopica, *Schinz; Cuvier, Thier.* i. 403.  
 Bouquetin à crinière d'Afrique, *Cuvier, R. A.* i. 266.  
 Takhitse, *Truter & Sömm. Geog. Ephem.* 1807, 274.  
 Takhaize, *Daniel, Afric. Scenery*, xxiv. t.  
 ? Bastard Eland, *Licht. Reise*, ii. 462.  
*Hab.* South Africa.

Male. Cape of Good Hope. From the South African Museum.

Male. Cape of Good Hope. Presented by the Earl of Derby.

#### OSTEOLOGY.

Horns. South Africa.

Skull and horns (of female?), horns slender.

Base of skull and horns. South Africa.

Horns (separate), short, thick. South Africa.

Horns, separate. S. Africa. Mr. Argent's Collection.

*Var.?* Docoï or White Mouth, *Mandingoes.*

Kob or Koba of the *Ioliffs.*

Vache brune, *French in Senegal.*

*Ægocerus equinus* var., *Gray, Knowsley Menag.* 16.

*Hab.* West Africa, *Whitfield.*

Two pair of horns. Gambia. Presented by the Earl of Derby.

The *Docoi* is pale reddish brown. Hair pale at base, with a minute black tip. Front of fore-legs and line on centre of tail blackish. Belly and inside of legs white. Face black brown. Crown and temple browner. Nose, lips, eyebrows, tuft of hair before eyes, white.

The head of the female covered with skin from Macarthy's Island, on the coast of Gambia, which Mr. Whitfield brought home, did not appear to differ from the specimen from the Cape in the British Museum. The species does not appear to be uncommon in the locality, for Mr. Whitfield brought over several pairs of horns. He informs me the flesh is very good venison. "It is called *Docoi* or *White Mouth* by the Mandin-

goes, *Kob* and *Koba* by the Ioliffs, and *Vache brune* by the French at Senegal." This is certainly not the *Kob* of Buffon (xii. t. 32. f. 1, 2). The negroes at the Gambia declare that this animal never bears more than one fawn; for after that period, the horns increase in length, and enter the loins and destroy the animals!

The small variety in the Paris, Upsal and Stockholm Museums, described as *A. Leucophæus* by Pallas and Sundevall, which was formerly found at the Cape, but is now said to be extinct, is the size of the Common Stag, *Cervus Elaphus*. M. Sundevall observes that it is as different from *A. Equina*, as the species of *Eleotragi* and *Tragelaphi* are from one another; and he observes, in a letter I have just received, "I must tell you, that after the inspection of a whole series of *A. Equina*, which Wahlberg brought home, I am convinced that the *A. leucophæa* of Pallas is a very distinct race. Our stuffed specimen, that must have been adult, has much smaller hoofs than the very young *A. Equina*, male as well as female, amongst Wahlberg's, and the tuft over the lachrymal sinus, as I have shortly expressed in the printed survey."

Mr. Gray observes, "When I examined the specimen at Paris, I regarded it as a young or rather dwarf specimen of *A. Equina*, and the absence of the nuchal crest led to this belief; and I am not satisfied that the number of rings on the horns is a sufficient proof of its being adult."

The *Blaubok* lives in herds of six to twelve, on the slopes and summits of small hills. They are most abundant north of the Kurrichane. They are exceedingly swift. Their flesh is used as food, but has a rank flavour, and is inferior to most of the South African Antelopes.—*A. Smith*.

## 2. *ÆGOCERUS NIGER*. The BLACK BOC.

Black. Face white, with a dark streak. Female and young brown.

*Antelope niger*, Harris, *Trans. Zool. Soc.* ii. 213. t. 29; Gervais, *Dict. Sci. Nat. Supp.* i. 267.

*Antelope Harrisii*, Harris, *Narrative*.

*Ægocerus niger*, Gray, *List Mamm. B. M.* 158.

*Aigocerus niger* (Sable Antelope), Harris, *Proc. Zool. Soc.* 1838, 2; *W. A. S. Africa*, t. 23, and head; Gray, *Ann. & Mag. Nat. H.* 1846, 232; Knowsley *Menag.* 17; *Proc. Zool. Soc.* 1849, 133; Turner, *P. Z. S.* 1849.

*Hab.* S. Africa.

A male. S. Africa. Major Harris's Collection. The specimen described by Capt. Harris.

Male. S. Africa. From M. Sundevall's Collection.

Female. S. Africa. From M. Sundevall's Collection.

## 22. ORYX.

Horns elongate, subulate, ringed at the base, straight or slightly arched, placed on a line with the face. Neck maned above and below. Tear-bag none. Nose subcervine. Muffle only margining the nostrils. Hoofs narrow in front; false hoofs large. *Female* ——. Teats 2 or 4. *Skull*: a suborbital fissure, but no fossa, the masseteric ridge not extending high; the auditory bulla large and compressed; the basioccipital bone with a raised eminence on each side; molars with supplemental lobes.

*Oryx*, *H. Smith, Griffith A. K.* v. 182; *Fischer, Syn.* 624; *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 17; *Turner, P. Z. S.* 1848.

*Bubalides*, sp., *Licht. Berl. Mag.* vi. 155, 1816.

*Oryx*, sp., *Ogilby, P. Z. Soc.* 1836, 139.

*A. Oryx*, sp., *Blainv. Bull. Soc. Phil.* 1816.

*A. Orix*, *Lesson, Nov. Tab. R. A.* 180, 1842.

\* *Horns straight.*

## 1. ORYX GAZELLA. The KOOKAAM or GEMSBOK.

Horns straight, shelving backwards. Throat with a bunch of black hairs. Grey. Rump, face, spinal line, lateral streak, and a very broad band on the thigh and cubitus, black in summer. Black streak on the face conjoined under the chin. *Young* pale brown. Hair blackish at the base.

*Capra Gazella*, *Linn. S. N.* i. 96.

*Antelope Oryx*, *Pallas, Spic. Z.* i. 14, xii. 16. 65; *Gmelin, S. N.* i. 189.

*A. Bubalides Oryx*, *Licht. Berl. Mag.* vi. 155; *Reise*, ii. 38; *Schreb. Saugth.* 1177. t. 257. t. 257 A. f. 1; *Desm. Mamm.* 473.

*A. Oryx oryx*, *Blainv. B. S. Phil.* 1816, 75; *H. Smith, G. A. K.* v. 814; *Fischer, Syn.* 478, 644; *Burchell, Trav.* ii. 23.

*Oryx Gazella*, *Gray, List Mamm. B. M.* 156; *Cat. Osteol. Sp. B. M.* 58; *Ann. & Mag. N. H.* 1847, 232; *Knowsley Menag.* 17. t. 16. f. 2, young; *Proc. Zool. Soc.* 1849, 124; *Turner, P. Z. S.* 1848.

*A. bezoartica*, *Pallas, Misc.* 8.

*A. Gazella*, *Forster, MSS.* 56.

*A. Reticornis*, part., *Erxl. Syst.* 272; *Gatterer, Brev. Zool.* i. 78; *Pallas, Nov. Com. Petrop.* xiii. t. 10. f. 6.

*Oryx* or *Gemsbok*, *Harris, W. A. S. A.* t. 9, and head.

*Oryx capensis*, *Ogilby, P. Z. S.* 1836, 139; *Harris, W. An. Africa*, t. 9.

*Oryx*, Cuvier, *R. A.* i. 262.

Passan, *Buff. H. N.* xii. 212. 272. t. 33. f. 3; *Supp.* v. 157. t. 17.

Egyptian Antelope, *Penn. Syn.* 25; *Quad.* i. 72; *Shaw, Zool.* ii. 312. t. 183.

Gems bock, *Dutch at the Cape.*

*Hab.* South Africa.

Female, adult. S. Africa.

Young. Presented by the Zoological Society.

Adult. S. Africa.

#### OSTEOLOGY.

Passan, *Daub. Buffon H. N.* xii. t. 33.

Single horn. South Africa.

Horns on base. South Africa.

Horns on head. South Africa.

Horns on head. South Africa.

Skull and horns. S. Africa. Mr. Stevens's Collection.

The *Gemsbock* eat the bulb of the water-root, a liliaceous plant.—*G. Cuming, Hunter's Life*, i. 118.

## 2. ORYX BEISA. The BEISA.

Horns straight. Throat without any bunch of hair. Pale grey. Face, belly and limbs white. Front of face, two streaks on cheek (not united under the throat), narrow line along throat, dorsal streak, streak on each side of abdomen, band round upper part, and streak in front of lower part, of fore-leg, and end of tail, black.

Antelope Beisa, *Rüppell, Atlas*, t. 5.

*Oryx Beisa*, *Sundevall*; *Gray, Ann. & Mag. N. H.* 1847, 232; *Knowsley Menag.* 17; *Proc. Z. Soc.* 1849, 134.

*Hab.* Abyssinia. Mus. Frankfort.

#### OSTEOLOGY.

Antelope beisa, *Rüpp. Faun. Abyss.* t. 5.

The male and female in the Frankfort Museum are smaller than *A. Gazella* of the Cape, and both have the face-streaks separate; there is a black streak on the throat, as in *A. Gazella*, but no bunch, nor is there any in the Frankfort specimen of *A. Gazella*; the mane of the nape of the male is small, indistinct, continued behind in a broader dark streak to the middle of the loins. In the male the mane is blackish, in the female like the back. They have no dark mark on the rump, found in *A. Gazella*.



\*\* *Horns arched, recurved.*

## 3. ORYX LEUCORYX. The ORYX.

Horns slender, slightly arched, white, reddish varied; in winter grey.

Antilope Leucoryx, *Pallas, Spic.* i. 14; xii. 17. t. 3. f. 1. 61.

A. Bubalides leucoryx, *Licht. Berl. Mag.* vi. 156; *Akad. Abh.* 1824, 200. t. 1; *Saugth.* t. 1; *Gmelin, S. N.* i. 190; *Schreber, Saugth.* 1180. t. 256; *Ehrenberg, Sym. Phys.* t. 3.

O. (Oryx) leucoryx, *Blainv. B. S. Phil.* 1816, 75; *Desm. Mamm.* 474.

A. Oryx leucoryx, *H. Smith, G. A. K.* v. 815; *Fischer, Syn.* 479. 645.

Antilope Algazella, *Rüppell; F. Cuvier, Mam. Lith.* t.

Antilope ensicornis, *Ehrenb.*

Oryx leucoryx, *Ogilby, P. Z. S.* 1836, 139.

Gazella recticornis, *Pallas, Nov. Com. Petrop.* xiii. 468. t. 10. f. 5.

Oryx, *Plin. Hist. Nat.* ii. 40, viii. 55; *Oppian. Cyneq.* iii. ver. 445; *Gesner, Quad.* i. 870; *Descrip. Egypt.* v. t. 18. f. 9, 10; *Bull. Soc. Philom.* 1816, 80; *Oriental Misc.* i. 127.

Oryx Leucoryx, *Ogilby, P. Z. Soc.* 1836, 139; *Gray, List Mamm. B. M.* 156; *Cat. Osteol. Sp. B. M.* 56; *Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 17. t. 16. f. 1. t. 17; *Proc. Zool. Soc.* 1849, 134; *Turner, P. Z. S.* 1848.

Antilope Eleotragus, *Schreb. t.* , not description.

Milk-white Antelope, *Penn. Syn.* 25; *Quad.* i. 76. t. 12.

White Antelope, *Shaw, Zool.* ii. 315. t. 184.

El Walrugh el Bukras, *Persians.*

Abu-hard, Jachmur and Yazmur, *Arabs.*

Antilope Gazella, *Pallas, Spic. Z.* xii. 17; *Gmelin, S. N.* i. 190; *Schreb. Saugth.* 1182. t. 257 A. f. 2, horn; *Fischer, Syn.* 479, 645.

A. Oryx Gazella, *Blainv. Bull. S. Phil.* 1816, 75.

? Antilope bezoardica, *Erxl. Syst.* 274?

A. Bubalides bezoartica, *Licht. Berl. Mag.* vi. 158.

A. (Oryx) bezoartica, *H. Smith, G. A. K.* v. 817.

Capra Gazella, *Linn. S. N.* i. 97?

Gazella Indica, *Brisson, Reg. A.* 67.

Gazella, *Alpin, Egypt.* 232. t. 14. f. 1.

Capra s. Hircus bezoartica, *Aldrov. Bisulc.* 755 fig.

Algalzel, *Buffon, H. N.* xii. 211. t. 33. f. 1, 2; *Penn. Quad.* i. 77; *Shaw, Zool.* ii. 216; *F. Cuvier, Mam. Lithog.* t.

*Hab.* N. or W. Africa; Nubia; Senaar; Senegal.

Female. Senaar.

Young. Senaar.

There is no appreciable difference between the Nubian and Senegal specimens.

#### OSTEOLOGY.

Algazel, *Daub. Buffon H. N.* xii. t. 32. f. 1, 2.

Skull and horns. North Africa.

Single horn of young. North Africa.

Single horn. North Africa.

Skull, young. Senaar.

#### Note.

1. Antilope Chora, *Rüppell, Zool. Atlas*, 22.

A. (*Alcelaphus*) Chora, *Fischer, Syn.* 475.

*Hab.* N. Africa. "Very doubtful;" *Rüppell*.

2. Antilope Dammah, *Rüppell, Zool. Atlas*, 22.

A. (*Alcelaphus*) Dammah, *Fischer, Syn.* 475.

*Hab.* N. Africa; desert of Haraga. "Very doubtful;" *Rüppell*.

*d. Throat slightly maned. Nape not maned.*

#### 23. ADDAX.

Horns slender, elongate, ringed, slightly spirally twisted, sloping nearly in a line with the face. Forehead with long hair. Neck with a slight gular mane, but no nuchal mane. Nose ovine, hairy. Hoofs semicircular, thin-edged. Tear-bag marked with a tuft of hair.

Addax, *Rafinesq. Anal. Nat.* 56, 1815?; *Gray, Ann. & Mag. N. H.* 1846, 232; *Turner, Proc. Zool. Soc.* 1850.

Addax, sp., *Laurill*.

Oryx, sp., *H. Smith; Fischer, Syn.* 624.

Strepsiceros, sp., *Rüppell, Verz. Senck. Samml.* 182, 1845.

Gazella, sp., *H. Smith, G. A. K.*

Damalis *Acronotus*, sp., *H. Smith, G. A. K.*

A. *Alcelaphus*, sp., *Lesson, Nov. Tab. R. A.* 180.

#### 1. ADDAX NASOMACULATUS. The ADDAX.

White; forehead and front of face darker; in winter grey.

*Capra Cervicapra*, *Linn. S. N.*, fide *Ogilby*.

Antilope *Cervicapra*, *Children, Denham's Travels*.

Antilope Addax, *Licht. Berl. Abhand.* 1824, 215. t. 2; *Saughth.*

t. 2, fem. and young; *Rüppell, Zool. Atl.* 19. t. 7; *F. Cuv.*

*Mam. Lithog.*

A. Oryx Addax, *H. Smith, G. A. K.* iv. 193. t.; v. 818.

A. *Alcelaphus* Addax, *Fischer, Syn.* 474, 641.

- Antilope gibbosa*, Savi, *Mem. Fig.*; *Féruss. Bull. Sci.* xx. 163.  
*Antilope Gazella mytilopes*, H. Smith, *G. A. K.* iv. 204. t. 182.  
 t. 183. f. 6, head; v. 821; *Fischer, Syn.* 636.  
*Antilope suturosa*, Otto, *Nova Act. Nat. Cur.* xii. 521. t. 48;  
*Griffith A. K.* t. 180.  
*A. (Alcelaphus) suturosa*, *Fischer, Syn.* 475, 641.  
*Damalis Acronotus suturosa*, H. Smith, *G. A. K.* iv. 350. t.;  
 v. 878.  
*Strepsiceros quem Addacem*, &c., *Plinii H. N.* xi. 37.  
*Strepsiceros addax*, *Rüppell, Verz. Senck.* 183.  
*Strepsiceros, Caji*, *Opusc.* 56; *Gesner, Quad.* 323.  
*Addax*, *F. Cuvier, Mam. Lith.* t., winter and summer; *Ehrenberg, Symb. Phys.* t. 4.

## JUNIOR.

- Ant. Gazella nasomaculata* (A. Bleue), *Blainv. Bull. Soc. Philom.*  
 1816, 75-78. t.; *Journ. Phys.* t. . f. ; *Isis*, 1819, t. 12.  
 f. 4-7; *Desm. Mam.* 456; *Fischer, Syn.* 462, 630.  
*A. Oryx addax*, H. Smith, *G. A. K.* iv. 204. t. 210. t. head;  
 v. 821, jun.  
*Addax nasomaculatus*, *Gray, Ann. & Mag. N. H.* 1846, 233;  
*Cat. Osteol. Spec. B. M.* 58; *Knowsley Menag.* 17; *Proc.*  
*Zool. Soc.* 1849; *Turner, P. Z. S.* 1848.  
*Oryx nasomaculata*, *Gray, List Mamm. B. M.* 156.  
*Antilope (Oryx) Tao*, H. Smith, *Griffith A. K.* v. 816.

A young female. N. Africa. From Mr. Bullock's Museum.  
 (The specimen described as *Antilope mytilopes*, H. Smith, t. 182,  
 and *A. nasomaculatus*, Blainv.)

Female and young. N. Africa. Presented by the Earl of Derby.

## OSTEOLOGY.

Horns (not united). North Africa. Presented by Captain Clapperton, R.N., and Major Denham.

\* Skeleton, imperfect. Presented by the Earl of Derby.

The Caprine Antelopes. *Body heavy. Legs and hoofs large.*  
*Tail very short, depressed, covered with hair to the base.*  
*Horns conical, rarely with a flat process in front.*

Caprine Antelopes (*Antilopæ Caprinæ*), *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 18.

Goat-like Antelopes, *Gray, Proc. Zool. Soc.* 1849, 135.

Ovine and Caprine Antelopes, *Turner, P. Z. S.* 1850.

a. *Nose cervine, with a moderate muffle. Horns short, inclined, recurved.*

## 24. CAPRICORNIS.

*Nemorhædus*, *H. Smith*; *Turner*, *P. Z. S.* 1850.

Horns short, strong, conical, inclined, recurved, arising behind the orbit. Nose cervine. Muffle moderate. Tear-bag and interdental pores large. Skull with "no suborbital fissure; the fossa rounded, shallow, very variable in size, sometimes very minute; the nasal bones rather short and broad, joining the maxillaries only by the interposition of some imperfect ossifications, or separated from them altogether; the masseteric ridge extending high before the orbit; the auditory bullæ very small; the basioccipital bone broad, with moderately developed eminences; the middle incisors slightly expanded at their summits; the molars without supplemental lobes."

*Hab.* Asia.

*Capricornis* (Sumatranus), *Ogilby*, *P. Z. S.* 1836, 138; *Gray*, *Cat. Osteol. Spec. B. M.* 57; *Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 18; *Proc. Zool. Soc.* 1849, 135.

*Nemorhedus*, sp., *H. Smith*; *Turner*, *P. Z. Soc.* 1848.

*Bubalides*, sp., *Licht. Berl. Mag.* vi. 115.

*Oryx*, sp., *Rüppell, Verz.* i. 80.

### 1. CAPRICORNIS SUMATRENSIS. The CAMBING OUTAN.

Black. Chin and linear nuchal mane yellowish, especially near the withers. Inside of the ears white. Young like adult.

*Antelope Sumatrensis*, *Shaw, Zool.* ii. 354; *Desm. Mam.* 465; *Fischer, Syn.* 470, 639; *Raffles, Linn. Trans.* xiii. 266; *F. Cuv. Mam. Lith.* t.

*A. Nemorhedus Sumatrensis*, *H. Smith, G. A. K.* iv. 277. t.; v. 861. *Antelope Bubalides interscapularis*, *Licht. Berl. Mag.* vi. 115, 1814; *Schreb. Saugth.* 1158.

*Capricornis Sumatrensis*, *Ogilby, P. Z. S.* 1836, 139; *Gray, Cat. Osteol. Sp. B. M.* 57; *Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 18; *Proc. Zool. Soc.* 1849, 135.

*Cambing Outan*, *Marsd. Sumatr.* 93. t.

*Nemorhedus Sumatrensis*, *Gray, List Mamm. B. M.* 166; *Turner, P. Z. S.* 1848.

*Sumatran Antelope*, *Penn. Quad.* ii. 321.

*Oryx Sumatrensis*, *Rüppell, Verz. Senck.* i. 80.

*Hab.* Sumatra. *Mus. Leyden.*

### OSTEOLOGY.

?Frontal bone, with horns.

## 2. CAPRICORNIS BUBALINA. The THAAR or THAR.

Grey brown, blackish washed. Crown and dorsal streak black. Thighs and outside of legs rufous. Nose, chin, inside of ears, lower part of mane, and legs below the hocks, whitish.

Capricornis Thar, *Ogilby, Proc. Zool. Soc.* 1836, 139.

Antilope Bubalina, *Hodgson, Proc. Zool. Soc.* 1832, ii. 12.

Kemas proclivis vel Thar, *Hodgson, J. A. S. B.* x. 913; *Calcutta Journ. N. H.* iv. 291.

Antilope Thar, *Hodgson, P. Z. S.* 1833, iii. 105; 1834, 99; *Journ. Asiat. Soc. Beng.* i. 346; iv. 1835, 889.

Oryx? Thar, *Rüppell, Verz. Senck.* 180.

Næmorhedus Thar, *Hodgson, Proc. Z. Soc.* 1834, 36; *Journ. A. S. B.* iv. 1835, 489.

Kemas Thar, *Hodgson.*

Næmorhedus proclivis, *Hodgson, Zool. Nepal ined. B. M. t.*

Capricornis bubalina, *Gray, List Mamm. B. M.* 166; *Cat. Osteol. Sp. B. M.* 57; *Cat. Hodgson Coll. B. M.* 27; *Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 18; *Proc. Zool. Soc.* 1849, 135.

Nemorhædus Bubalina, *Turner, P. Z. S.* 1848.

*Hab.* India; Nepal.

Male and female. Nepal.

Nepal. Presented by B. H. Hodgson, Esq.

## OSTEOLOGY.

Frontal bone and horns. Nepal.

Frontal bone and horns. Nepal.

Skull, male. Nepal. Presented by B. H. Hodgson, Esq.

Skull, female. Nepal. Presented by B. H. Hodgson, Esq.

Horns. Nepal. Mr. Argent's Collection.

## ICON.

Drawing of male.—*Hodgson, Icon. ined. B. M. t.* 160. f. 1. Presented by B. H. Hodgson, Esq.

Drawing of male and female.—*Hodgson, Icon. ined. B. M. t.* 161. Presented by B. H. Hodgson, Esq.

Drawing of head.—*Hodgson, Icon. ined. B. M. t.* 163, 164. Presented by B. H. Hodgson, Esq.

Drawing of skull.—*Hodgson, Icon. ined. B. M. t.* 187. f. 5, 6. Presented by B. H. Hodgson, Esq.

A head was sent to the United Service Museum by Lieut.-Colonel Childers, of the 11th Dragoons, in 1820, under the name of *Serow* or *Imo*. "It is not speedy, as might be inferred from its make. Its flesh is very coarse and bad. It is usually killed with poisoned arrows."—*Hodgson, l. c.* 14.

The *Thar* or *Suraw* inhabits the sub-Himalaya as far north as the forest extends. They are not gregarious, and they rush with fearful precipitancy down the steep mountain. They rut in February or March, gestate eight months, and have one young in September or October. They always have a gall-bladder.—*Hodgson, Journ. Asiat. Soc.* 1835, Sept.

The *Gorals* and *Thars* differ from the Antelope in being stout, clambering animals, but they are not, as some have supposed, allied to the *Bovines*.—*Hodgson*.

### 3. CAPRICORNIS? CRISPA. The JAPANESE GOAT ANTELOPE.

Fur harsh, crisp, brown or brownish. Sides whitish. Cheeks white. Legs black brown.

Antelope crisper, *Temm. Fauna Japon. t.*, 1819.

Capricornis crisper, *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 18; *Proc. Zool. Soc.* 1849, 136.

*Hab.* Japan. *Mus. Leyden.*

OSTEOLOGY. *Temm. Fauna Japon. t.*

*b. Nose ovine, without any muffle. Horns short, conical, recurved, ringed.*

### 25. NEMORHEDUS.

Horns short, conical, inclined, recurved, arising from behind the orbits. Nose ovine, hairy. Muffle none. Tear-bag none? Interdigital pores none. Fur short.

*Nemorhedus*, sp., *H. Smith, Griffith A. K.* v. 182; *Turner, P. Z. S.* 1850; *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 18.

*Kemas (Goral), Ogilby, Proc. Zool. Soc.* 1836, 138 (not *Lesson*).

*Kemas*, sp., *Hodgson; Lesson, Nov. Tab. R. A.* 182, 1842.

*Damalis*, sp., *J. Brookes, Cat. Mus.* 64, 1828.

Mr. Turner observes, "Although the 'tear-bag' is said to be wanting in the *Goral*, there is certainly a slight depression upon the lacrymal bone, and the pore with which the gland opens may be so small in this species as to escape detection in dried specimens."—*Turner*.

### 1. NEMORHEDUS GORAL. The GORAL.

Grey brown, minutely black-dotted. Streak on lower part of neck blackish. Cheeks, chin and upper part of throat white. Front of fore-legs blackish. Feet rufous. Young paler. Dorsal line rather darker.

Antelope Goral, *Hardw. Linn. Trans.* xiv. 518. t. 14; *Calcutta Journ. N. H.* i. t. 12. f. 2, 3; *Fischer, Syn.* 471, 639.

A. Nemorhedus Goral, *H. Smith, G. A. K.* v. 862; *Hodgson, J. Asiat. Soc. Beng.* i. 346; *Proc. Zool. Soc.* 1833, 105; 1834, 99.

Kemas Goral, *Ogilby, P. Z. Soc.* 1836, 138; *Hodgson, Calcutta Journ. N. H.* iv. 291.

Kemas ghoral, *Lesson, Nov. Tab. R. A.* 182.

Bouquetin de Nepaul, *F. Cuvier, Mam. Lith. t.*, copy of *Hardwicke*.

Antilope Goural, *Hodgson, J. Asiat. Soc. Beng.* 1835, 418.

Nemorhedus Goral, *Gray, List Mamm. B. M.* 166; *Cat. Osteol. Sp. B. M.* 37; *Cat. Hodgson Coll. B. M.* 27; *Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 18; *Proc. Zool. Soc.* 1849.

Suja? et Goomast?, *Affghanistan, Journ. Asiat. Soc. Calcutta.*

A. Duvaucellii, *H. Smith, G. A. K.* iv. 277, v. 861.

A. Sumatrensis  $\beta$ . Duvaucelli, *Fischer, Syn.* 639.

Damalis Hardwickii, *J. Brookes, Cat. Mus.* 64, 1828.

Nemorhedus Goural, *Hodgson, J. Asiat. Soc. B.* iv. 1835, 488.

N. Goral vel Hardwickii, *Hodgson, Proc. Zool. Soc.* 1834, 88; *Journ. Asiat. Soc. B.* x. 913.

*Hab.* India; Sub-Himalayas.

Hunter's skin, without feet. Nepal. Presented by General Hardwicke.

Male and female. Nepal. Presented by B. H. Hodgson, Esq.

Male. Nepal. Presented by B. H. Hodgson, Esq.

Young, half-grown. Nepal.

#### OSTEOLOGY.

Horns (of female?), very thin, far apart at the base.

Two skulls of males. India. Presented by B. H. Hodgson, Esq.

Three imperfect skulls of females. Presented by B. H. Hodgson, Esq.

Skeleton, imperfect. Presented by B. H. Hodgson, Esq.

#### ICON.

Drawing of male, female and young.—*Hodgson, Icon. ined. B. M.* t. 157; male copied t. 160. f. 2. Presented by B. H. Hodgson, Esq.

Drawing of male and female.—*Hodgson, Icon. ined. B. M.* t. 158. Presented by B. H. Hodgson, Esq.

Drawing of head of male and female in detail.—*Hodgson, Icon. ined. B. M.* t. 159. Presented by B. H. Hodgson, Esq.

Drawing of skull.—*Hodgson, Icon. ined. B. M.* t. 187. f. 7, 8. Presented by B. H. Hodgson, Esq.

The *Goral* inhabits the Sub-Himalayas as far towards the snows as the great forest extends, to which exclusively they adhere, living in families of four or six. Breeding amid the crags and rocky recesses: rutting in January: gestate six months: the young born in May or June.

*Note*.—Antilope *Nemorhædus Duvaucellii*, *H. Smith*, *G. A. K.* iv. 277, v. 861; Antilope *Sumatrensis*  $\beta$ ? *Duvaucellii*, *Fischer*, *Syn.* 639—was described from a drawing sent to Paris by M. Duvaucel without any notes, as were most of his drawings. It is only a badly coloured tracing of a drawing of the *Goral* in General Hardwicke's Collection. It has no connection with *C. Sumatrensis*, to which many naturalists have referred it.

In the *Bengal Journal*, two Antelopes, said to resemble the *Goral*, are mentioned as found in Afghanistan, one called *Suja* and the other *Goomast*.

## 26. MAZAMA.

Horns small, conical, round, nearly erect, slightly inclined backwards, and recurved at the tip, ringed at the base. Nose ovine, hairy. Muffle none. Tear-bag none. Fur double; outer very long, hairy, dependent; under fur short, woolly.

*Aplocerus*, *H. Smith*, *Griffith A. K.* v. 1827; *Turner*, *P. Z. S.* 1850.

*Mazama*, *Rafinesque*; *Gray*, *Ann. & Mag. N. H.* 1846, 232;

*Knowsley Menag.* 19; not *H. Smith*, nor *Ogilby*, *P. Z. S.* 1836.

*Rupicapra*, sp., *Blainv. Bull. Soc. Phil.* 1816.

*Capra*, sp., *Desmoulin, Dict. Class. Hist. Nat.* 111; *Ogilby, Proc. Zool. Soc.* 1836, 137.

*Ovis*, sp., *Ord, Bull. Soc. Phil.* 1817.

*Antilocapra*, sp., *Lesson*.

### 1. MAZAMA AMERICANA. The MAZAME or SPRING-BUCK.

White. Horns and edge of the nostrils black.

*Capra*? *Columbiana*, *Desmoul. Dict. Class. H. N.* iii. 580; *Fischer, Syn.* 487.

*Capra Americana*, *Rich. Faun. Bor. Amer.* 268. t. 22.

*Capra montana*, *Harlan, Fauna Amer.*

*Capra lanigera* aut *Americana*, *Ogilby, P. Z. S.* 1836, 137.

*Ovis montana*, *Ord, Bull. Soc. Philom.* 1817, 175; *Journ. de Phys.* lxxxv. 333.

*Antilocapra montana*, *Lesson, Nov. Tab. R. A.* 182.

A. (*Rupicapra*) *Americana*, *Blainv. Bull. Soc. Phil.* 1816, 73-80.

*Antilope lanata* (Mountain Sheep Antelope), *Bennett, Cat. Mam. Zool. Soc.* 1828, 14 fig., & 1829, 18 fig.



*Antilope Americana*, *Desm. Mam.* 478.

*Antilope Aplocerus lanigera*, *H. Smith, Linn. Trans.* xiii. 38. t. 4 ;  
*G. A. K.* v. 865.

*Mazama dorsata*, *Rafinesque.*

*Mazama sericea*, *Rafinesque.*

*Antilope (Aplocerus) Mazama*, *H. Smith, Linn. Trans.* xiii. 33 ;  
*Griffith, A. K.* v. 865 ; *Fischer, Syn.* 482. 647.

*Aplocerus Americanus*, *Turner, P. Z. S.* 1850.

*Mazama seu Cervus cornutus*, *Seba, Thes.* i. 69. t. 42. f. 3.

Rocky Mountain Sheep, *Jameson, Wern. Mem.* iii. 306.

*Hab.* N. America ; Rocky Mountains. *Mus. Linn. Soc. Mus.*  
*Zool. Soc.*

## 27. RUPICAPRA.

Horns elongate, slender, round, nearly erect from above the orbit, suddenly hooked backward at the tip. Nose ovine, hairy. Muffle none. Fur soft. Skull with "a minute suborbital fissure, but no fossa; the masseteric ridge ascending high before the orbit; the auditory bulla very small and compressed; the basi-occipital bone flat; the incisors equal-sized, vertical; the molars without supplemental lobes."—*Turner.*

*Antilope, Pallas, Misc.* 4 ; *Spic.* 7. 17.

*A. Rupicapra, Erxleb. S. A.* 268, 1777 ; *Desm.* 1804 ; *Illiger,*  
1811.

*Capra, sp., Linn. ed.* 6. 14. 17.

*Rupicapra, Fleming, Phil. Zool.* 198, 1822 ; *H. Smith, Griffith*  
*A. K.* v. 182 ; *Gray, Ann. & Mag. N. H.* 1846, 232.

*Rupicapradæ, J. Brookes, Cat. Mus.* 64, 1828.

### 1. RUPICAPRA TRAGUS. The CHAMOISE OR GEMS.

Yellowish brown, with a dark dorsal streak ; in *winter* blackish.

*Antilope Rupicapra, Pallas, Misc.* 4 ; *Spic.* i. 7, xii. 12 ; *Gmelin,*  
*S. N.* i. 182.

*A. (vera) rupicapra, Licht. Berl. Mag.* vi. 171 ; *Schreb. Saugth.*  
1200. t. 279 ; *Burchell, Trav.* ii. 23 ; *Desm. Mam.* 477.

*A. Rupicapra Rupicapra, Blainv. B. S. Phil.* 1816, 76.

*A. (Rupicapra) Rupicapra, H. Smith, G. A. K.* iv. 281 t., v. 863 ;  
*Cuvier, Dict. Sci. Nat.* ii. 249 t. ; *Rég. Anim.* i. 264 ; *Fischer,*  
*Syn.* 481, 646.

*A. Rupicapra Persica, H. Smith, G. A. K.* v. 863.

*Rupicapra pyrenaica, H. Smith, G. A. K.* v. 863 ; *Bonap. Fauna*  
*Ital.*

*Rupicapra Europæa, Rüppell, Verz. Senck. Samml.* 183, 1845.

*Rupicapra (hæmulicornis), J. Brookes, Cat. Mus.* 64, 1828.

*Capra Rupicapra*, Linn. S. N. i. 95.

*Rupicapra tragus*, Gray, *List Mamm. B. M.* 167; *Cat. Osteol. B. M.* 57; *Ann. & Mag. N. H.* 1846, 232; *Proc. Zool. Soc.* 1849.

*Rupicapra*, Plinii H. N. viii. 53; Gesner, *Quad.* 321. fig. 329.

*Rupicapra Tragus*, Turner, P. Z. S. 1850.

*Rupicapra capella*, Bonap. *Fauna Ital.*

*Tragus seu Dorcas*, Klein, *Quad.* 17.

*Ἀτὶ ἀγριος*, Oppian, *Cyneg.* ii. 338.

Chamois, Perrault, *Anim.* i. 201. t. 29; Buffon, H. N. xii. 136, 177. t. 16; Penn. *Syn.* 17; *Quad.* i. 72; Shaw, *Zool.* ii. 361. t. 187.

Gems, *Riding Jagdb. Th.* t. 12; Kleine, *Th.* t. 72; Wilde, *Thier.* t. 25; Meyer, *Thier.* i. t. 66; Lewenwald. *Damegraph.* 1793; Allisser. v. *Salins Marschlin Hopfn. Mag.* i. 111.

*Hab.* South Europe; Switzerland; Pyrenees and Pindarus.

In summer coat, yellowish. Alps, Europe.

In change (nose imperfect). Alps, Europe.

In winter coat, blackish. Alps, Europe.

Two skins. Mount Pindus. Presented by S. S. Saunders, Esq. Young. Alps, Europe.

#### OSTEOLOGY.

Chamoise, Daub. in Buffon *Hist. Nat.* xii. t. 17.

Two skulls and horns. Alps. Presented by General Hardwicke.

Three horns. Alps.

Skull, with horns. Alps. Presented by John Gould, Esq.

Skeleton. Alps. From Mr. Brandt's Collection.

Three pair of horns of different ages. Alps. Presented by J. E. Gray, Esq.

I have compared specimens from Switzerland, the Pyrenees and Mont Pilatus, and cannot discover any difference between them.

#### 28. ANTILOCAPRA.

Horns erect, arising directly over the orbit, compressed at the base, with a flattened process in front, and ending in a conical recurved tip. Nose ovine, hairy. Muffle none. Tear-bag none. Fur very close. Hair stiff, coarse, flattened, wavy. Tail very short. False hoofs none. Inguinal pores none. Legs rather slenderer than the other Goat Antelopes. Female horned. Skull with "no suborbital depression; the fissure lengthened; the nasal bones widest posteriorly; the orbit a little elevated above the line of the face, and the masseteric ridge not rising before

it; the auditory bulla moderate, compressed and angular; the incisors equal-sized, sloping; the molars without supplemental lobes."—*Turner*.

*Dicranocerus*, *H. Smith, Griffith A. K.* v. 182; *Fischer, Syn.* 623; *Turner, P. Z. S.* 1850.

*Antilocapra* (*Americana*), *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 19.

*Antilopecapra*, *J. Brookes, Cat. Mus.* 64, 1828.

*Oreammos, Rafin.*

*Mazama, Ogilby, P. Z. S.* 1836, 137.

*Cervus*, sp., *Blainville*.

*Antilopecapradæ* or *falcicornis*, *J. Brookes, Cat. Mus.* 64, 1828.

# 1. ANTILOCAPRA AMERICANA. The CABBIT OR PRONG-HORN.

Pale brown; beneath and caudal disk white.

*Antilope* (*Dicranocerus*) *furcifer*, *H. Smith, Linn. Trans.* xiii. 28. t. 2; *Griffith, A. K.* iv. 170 t., 352 t., v. 808.

*A. rupicapra furcifer*, *Desm. Mamm.* 479; *Fischer, Syn.* 481. 646.

*Antilocapra furcifer*, *Richardson, Fauna Bor. Amer.* t. 21; *Gray, List Mamm. B. M.* 170.

*Cervus bifurcatus, Rafinesque.*

*Antilope* (*Dicranocerus*) *palmata*, *H. Smith, Linn. Trans.* xiii. 31. t. 3, horns; *Griffith A. K.* iv. 352 t., v. 809; *Desm. Mamm.* 479; *Fischer, Syn.* 481. 647; *Coulter, P. Z. S.* 1826, 121.

*Antilopecapra furcifer*, *J. Brookes, Cat. Mus.* 64, 1828.

*Antilocapra americana*, *Gray, Cat. Osteol. B. M.* 58; *Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 19; *Proc. Zool. Soc.* 1849, 137.

*Cervus hamatus, Blainv. Bull. Soc. Philom.* 1816, 73.

*Antilocapra Americana*, *Ord & Blainv. Bull. Soc. Philom.* 1818, 146; *Journ. Phys.* lxxxviii. 314.

*Mazama furcifer*, *Ogilby, P. Z. S.* 1836, 137.

Prong-horned Antelope, *Lewis & Clark, Travels.*

Springbock, *Anglo-Americans.*

Cabrit, *Canadian Hunters.*

Kistu-he, *N. Amer. Indians.*

*Hab.* N. America; in the plains in summer, and in the mountains in winter. Called the Goat. Mexico (*Coulter*).

A fawn, just born. N. America. Presented by Sir John Richardson, M.D.

Male and female. Rocky Mountains. Presented by the Hudson's Bay Company.

Male, adult, and young. Rocky Mountains.

## ANAT.

*Antilope furcifer*, *H. Smith, Linn. Trans.* xiii. t. 2.

*A. palmata*, *H. Smith, Linn. Trans.* xiii. t. 3, horns only.

\*Skull, female. Hudson's Bay. Presented by the Hudson's Bay Company.

Dr. Coulter brought a head from Mexico which had the face dark brown, and the horns large, wide-spreading and much hooked at the tip, like the *A. palmata* of H. Smith (*Proc. Zool. Soc.* 1826, 121). This is probably only a larger variety in the summer fur.

## II. The Antelopes of the Desert. *Nose broad; nostrils subovalular, and lined with bristles within.*

Antelopes of the Desert (*Antilopæ desertorum*), *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 19; *Proc. Zool. Soc.* 1849, 138.

*Damalidæ*, *J. Brookes, Cat. Mus.* 64, 1828.

I am not aware that this division was ever hinted at until published in the *Ann. & Mag. N. H.* for 1846. Mr. Turner observes: "I will now proceed to the 'Antelopes of the Desert' of Mr. Gray, a very well-marked natural group, consisting of two distinct genera, which have usually been widely separated. Mr. Blyth, however, in the translation of Cuvier's *Animal Kingdom*, hints at their affinity, and Mr. Waterhouse informs me that he has long held that opinion. Indeed he has placed the species next each other in the Catalogue of the Society's Museum." And again: "*A. pygargus* has usually been placed among the Gazelles, where it was left by Mr. Blyth, who speaks of it as leading 'through *A. Caama*, *Bubalis*, &c. to the Gnus.' Mr. Waterhouse, who in the Catalogue of the Society's Museum uses the generic name *Antilope* throughout, places this species between the Gazelles and the others of its natural genus, to which the Gnu follows. Mr. Gray, who had left it with the Gazelles in the *List of Mammalia* in the British Museum, has removed it to its true place in his paper in the *Annals and Magazine of Natural History*."

The reference to the Catalogue of the Zoological Society's Museum does not justify these observations. In the edition for 1839 I find the species placed in the middle of the genus *Antilope*, intermixed with other subgenera, thus: 272. *A. Dama*; 273. *A. Pygarga*; 274. *A. Caama*; 275. *A. Gnu*; 276. *A. Oryx*; 277. *A. leucoryx*; 278. *A. Sing-Sing* (p. 41).

The only observation I can find in Blyth respecting the subject is as follows: "*A. pygargus*, which seems to tend through

*A. Caama* and *bubalus*, &c., to the Gnus" (p. 139); but in neither is there the slightest idea of the character which unites them together as a natural group.

A. Equine Antelopes. *Muzzle broad, depressed, spongy, bristly; nostrils large, covered with a large spongy valve.*

Equine Antelopes (Antilopeæ Equinæ), *Gray, Ann. & Mag. N. H.* 1846, 232; *Knowsley Menag.* 19; *Proc. Zool. Soc.* 1849, 138.

Catoblepas et Damalis (et acronotus), *H. Smith, G. A. K. Damalidæ, part., J. Brookes, Cat. Mus.* 64.

## 29. CONNOCHETES.

Horns bent down and outwards on the sides, broad at the base, bent up at the tip. Nose broad, dilated, spongy, bristly. Nostrils large, operculated. Tail elongate, bushy, hairy from the base. Hoofs compressed in front. Intermaxillaries elongate, extending to the nasal, the front half expanded and flattened, the front part much dilated, flattened and sharp edged. Nose-hole rather large. Frontal bone much produced behind. *Females*: teats 4. Skull: "the general characters the same as in *Alcelaphus*; but the depression before the orbit less marked; the occiput rather less prolonged, and its base, together with the auditory bulla, broader."—*Turner.*

*Hab.* S. Africa.

Connochetes, *Licht. Berl. Mag.* vi., 1814.

Catoblepas, *Plin.*; *Gray, Lond. Med. Repos.* 1821; *H. Smith, Griffith A. K.* v. 182; *Fischer, Syn.* ii. 625; *Gray, Ann. & Mag. N. H.* 1847, 232; *Knowsley Menag.*; *Turner, P. Z. S.* 1850; *Cuvier, Règ. Anim.* ed. 2. i. 274.

Catablepas, *J. Brookes, Cat. Mus.* 64.

Boselaphus (type), *Blainv. Bull. Soc. Philom.* 1816, 75.

Bos, sp., *Forster MSS.*

This genus, which has all the characters of the true Antelopes, in the slenderness and proportion of the leg-bones, has been placed with the Oxen by Forster, and in the Bovine section by Professor Sundevall. Lichtenstein's name has undoubted priority of publication.

*a. Nose with a crest of reversed hair. Chest maned. Catoblepas.*

1. CONNOCHETES GNU. The GNU or KOKOON.

Nose with a tuft of reversed hair. Chest maned. Brown or

blackish; the lower part of the mane and tail often paler or whitish. Young pale fulvous. Nasal, gular and nuchal mane black.

Antelope Gnou, *Zimmerm. Geog. Gesch.* ii. 102; *Gmelin, S. N.* i. 189.

A. *Connochætes* Gnu, *Licht. Berl. Mag.* vi. 165; *Reise*, ii. 66; *Schreb. Saugh.* 1165. t. 280; *Cuvier, Dict. S. N.* ii. 247. t.; *Harris, W. A. Anim.* t. 1, and heads; *Burchell, Trav.* i. 24, 431, 432, ii. 278; *Desm. Mam.* 472.

A. *Boselaphus* Gnu, *Blainv. B. S. Phil.* 1816, 75; *Fischer, Syn.* 475, 642.

A. *Capensis*, *Gatterer, Brev. Zool.* i. 80.

*Catablepas operculatus*, *J. Brookes, Cat. Mus.* 64.

*Bos Connochætes*, *Forster, MSS.* 66.

*Bos* Gnu, *Thunb. Mem. Acad. Petersb.* iii. 339.

*Catablepas* Gnu, *H. Smith, G. A. K.* v. 885; *Gray, List Mamm. B. M.* 154; *Ann. & Mag. N. H.* 1846, 232.

*Catablepas* Gnou, *Gray, List Osteol. Sp. B. M.* 59.

Antelope *Boselaphus Taurina*, *Fischer, Syn.* 476.

Antelope *Taurina*, *Burch. Travels*, ii. 277. fig.

Antelope Gnu var. *grisea*, *Goldfuss.*

*Catablepas Taurina*, *H. Smith, G. A. K.* v. 886; *Gray, List Mamm. B. M.* 154, not *A. Smith.*

*Katablepas*, *Ælian, Anim.* vii. 5; *Plinii H. N.* viii. 39.

T'Gnu, *Hottentots, Sparrm. K. Svensk. V. Hand.* 1779, 76. t. 3.

Gnou or Niou, *Buffon, H. N. Supp.* vi. 39. t. 8; *Cuvier, R. A.* i. 264; *Daniel, African Scenery*, t. 3.

*Boschbuffell, Vosmaer, Besch.* 1784, t.

Gnou Antelope, *Penn. Quad.* i. 70; *Shaw, Zool.* i. 319; *Barrow, Travels*; *Burchell, Trav.*

? *Koknu, Truter & Sömm. Geog. Ephem.* 1807, 273.

*Wildebeest, Dutch at Cape.*

*Kokong, Licht. Berl. Mag.* vi. 166.

*Hab. S. Africa.*

S. Africa. Presented by William Burchell, Esq., LL.D.

Half-grown. S. Africa.

Young? S. Africa.

Young. South Africa. From the South African Museum.

Young. S. Africa.

Three parts grown. S. Africa.

#### OSTEOLOGY.

Frontal bone and horns. South Africa. Presented by J. Hillier, Esq.

Skull, with horns. S. Africa. From Mr. Argent's Collection.

Skeleton. S. Africa. From the Zoological Society's Collection.  
Skull, with horns. S. Africa.

# ICON.

Drawing of the head in colours by Rymdyk, 1775.—*Bank. Icon. ined. B. M. t. 56.*

*Bos Connochætus*.—*G. Forster, Icon. ined. B. M. i. t. 19, 19a, 20-28.*

The *Antilope Gnu* of Burchell, H. Smith, F. Cuvier and Harris, "and the *Kokong* of Lichtenstein," has a white tail and mane. Burchell and H. Smith have given the name of *A. taurina* to the specimens which have those parts black. When young they are fulvous, and become black as they reach maturity. The specimen of the *Kokoon* in the Museum of the London Missionary Society (Blomfield Street, Moorfields), named by Colonel H. Smith *Kokoon* (*Cat. taurina*, Griff. A. K. iv. 369, v. 368), is an adult common *Gnu*, *C. Gnu* (Var. mane and tail white; *Kokong*, *Licht. Trav. Cape*), and his description of Dr. Burchell's specimen in the British Museum agrees with the *Gnu* in having the ridge of hair on the face. Indeed, Dr. Burchell (*Travels*, ii. 278) appears to consider the difference between the *Gnu* and *A. taurina*, that the former has a white and the latter a black tail. Dr. Andrew Smith (*Illust. Zool. S. A.*) has regarded the *C. taurina* and *C. Gorgon* as the same species. Dr. Sundevall, in his *Synopsis*, has, by mistake, given the name of *C. taurina* to the *Gorgon*, or *Brindled Gnu* (*C. Gorgon*, H. Smith).

*b. Nose with smooth hair. Chest not maned. 30. Gorgon.*

## 2. CONNOCHETES GORGON. THE GORGON OR BRINDLED GNU.

Face convex, smooth, covered with hair lying towards the nose. Chest not maned. Black, varied and striped with grey. *Half-grown* blackish; crown grey. *Young* dark grey; face, gular and nuchal mane, and end of tail, black.

*Catoblepas Gorgon*, H. Smith, G. A. K. iv. 371. t., v. 887; *Gray, List Mamm. B. M. 154; Ann. & Mag. N. H. 1846, 232; Knowsley Menag. 20. t.; Proc. Zool. Soc. 1849, 139.*

*Antilope Boselaphi Gorgon, Fischer, Syn. 643.*

*Antilope Gnu var., Smut, Mam. Cap. 94.*

*Gorgon fasciatus, Gray, Knowsley Menag. t.*

*Bastard Wilde Beest, Dutch at Cape.*

*Kokoon* or *Brindled Gnou, Harris, S. Africa, t. 4, and head.*

*Catoblepas Taurina, Sundevall, Pecora; not Burchell nor H. Smith. Hab. S. Africa; Cape of Good Hope.*

*Male. From the South African Museum.*

Female. S. Africa.

Young. S. Africa. From the S. African Museum.

Half-grown. S. Africa.

#### OSTEOLOGY.

Skull. S. Africa.

The *Brindled Gnu* lives to the north of the Black River or Nugariep, and though herds feed almost on its banks, yet it is not known to cross it. It occurs in large herds on the plains north of the Orange River, and when alarmed each herd decamps in long regular files. The flesh is much sought after. The Bechuana use the skins for their cloaks or mantles.—*And. Smith.*

*Note.*—*Catoblepas Brooksii*, *H. Smith*, *G. A. K.* iv. 366. t. f. , from horn only, is a very doubtful species.

- E. The Bovine Antelopes.** *Nose moderately broad, with a moderate or small, bald, moist muffle. Horn high on the frontal ridge. Grinders rather small, without supplemental lobes. The central cutting-teeth enlarged at the end. Skull with "a large deep impression before the orbit, but no fissure; the masseteric ridge not extending high; the bones of the face lengthened downwards and forwards, and the occiput also prolonged and drawn downwards; the process upon the alisphenoid bone, which terminates the pterygoid ridge, prolonged and ensiform; the auditory bulla large and prominent, enclosing a large rounded space for the attachment of the stylohyal bone; the basioccipital tubercles high and sharp, the groove between them narrow in front, wide behind, with a flat space between the occipital condyles; the median incisors expanded at their summits; the molars rather small, narrow, and without supplemental lobes, showing, when somewhat worn, a pit in the middle."*—Turner.

Bovine Antelopes, *Gray*, *Ann. & Mag. N. H.* 1846; *Knowsley Menag.* 20.

*Damalis* § *acronotus*, *H. Smith*, *G. A. K.* iv.–v.

*Alcelaphus*, *Turner*, *P. Z. S.* 1850.

*Damalidæ*, part., *J. Brookes*, *Cat. Mus.* 64.

#### 31. ALCELAPHUS.

Horns lyrate, on the upper edge of the rather produced frontal bones, thick at the base, end suddenly curved at a nearly right angle. Nose moderately broad, cervine. Muffle moderate, bald, moist. Crumen covered with a tuft of hair. *Female*: teats 2.

*Alcelaphus* (*Bubalis*), *Blainv. Bull. Soc. Philom.* 1816.

*Acronotus*, sp., *H. Smith*, *Griffith A. K.* v. 182; *Fischer*, *Syn.* 625.



*Boselaphus*, Gray, *Ann. & Mag. N. H.* 1846, 233; *Knowsley Menag.* 20; *Proc. Zool. Soc.* 1849, 139; not *Blainv.*

*Alcelaphus*, sp., *Turner, Proc. Zool. Soc.* 1850.

*Buselaphus*, *Raii Syn.*

*Gazella*, sp., *Blainv. Bull. Soc. Phil.* 1816.

? *Bubalis*, *Rafinesque, Anal. Nat.* 56, 1815.

# 1. ALCELAPHUS BUBALIS. The BUBALE.

Pale brown, nearly uniform. Rump like back.

Antelope *Bubalis* (part.), *Pallas, Misc.* 7; *Spic. Z.* xii. 16 (not *syn.*).

Antelope *Bubalis*, *Goldfuss, Schreb. Saugth.* 1171. t. 277; *Gmelin, S. N.* i. 288; *Cuvier, Dict. Sci. Nat.* ii. 241. t.; *F. Cuvier, Mam. Lithog.* t.; *Fisch. Syn.* 473, 641.

A. *Bubalides Bubalis*, *Licht. Berl. Mag.* vi. 163; *Burchell, Trav.* i. 420, ii. 82, 334.

A. (*Alcelaphus*) *Bubalis*, *Blainv. Bull. S. Phil.* 1816, 75; *Desm. Mam.* 466.

*Damalis* (*acronotus*) *bubalis*, *H. Smith, G. A. K.* v. 876.

*Damalis bubalis*, *J. Brookes, Cat. Mus.* 64.

*Bubalis Mauritanicus*, *Ogilby, P. Z. S.* 1836, 139.

*Alcelaphus Bubalis*, *Turner, P. Z. Soc.* 1848.

*Βούβαλος*, *Oppian, Cyneget.* ii. 300.

*Bubalus*, *Plin. H. Nat.* viii. 15; *Aldrov. Bisulc.* 363. fig. 365.

*Buselaphus Cagii*, *Raii Quad.* 81.

*Boselaphus Bubalis*, Gray, *Ann. & Mag. N. H.* 1846, 233; *Knowsley Menag.* 20. t. 20. f. 1; *Proc. Zool. Soc.* 1849, 139.

*Acronotus Bubalis*, Gray, *List Mamm. B. M.* 157; *Cat. Osteol. B. M.* 58.

Vache de Barbarie, *Perrault, Mém. Hist. Anim.* i. 203, ii. 24. t. 39.

Bekker el Wash, *Yachmur bilicus*, *Shaw, Reise*, 151, 358.

Bubale, *Buffon, H. N.* xii. 294. t. 37. t. 38. f. 1; *Supp.* vi. 133. t. 14; *Cuvier, Menag. Mus.* t.

Bubale des Anciens, *Cuvier, Règ. Anim.* i. 161.

Cervine Antelope, *Penn. Syn.* 37; *Quad.* i. 102; *Shaw, Zool.* ii. 331. t. 184.

*Hab.* North Africa.

Young. N. Africa. From Mr. Fraser's Collection.

## OSTEOLOGY.

Bubale, *Daub. in Buffon H. N.* xii. t. 37, t. 38. f. 1, 2.

Skull and horns, one deformed. North Africa?

Frontal bone and horns. North Africa?

*Var.* 1.? *Tunisianus*. Uniform pale brown; with a dark brown streak down the outer side of the front of the fore-legs, like

the streak on the leg of the *Lecama* or *Harte beest* from South Africa, which is not generally found in this species.

*Boselaphus Bubalis* var. 1, *Gray, Knowsley Menag.*; *Proc. Zool. Soc.* 1849, 139.

*Hab.* Tunis.

A skin, without a head or hoofs, brought by Mr. Fraser from Tunis; it probably indicates a third species, or perhaps the dark streak is only marked in the very adult or fully-coloured specimens.

## 2. *ALCELAPHUS CAAMA*. The *LECAMA* OR *HARTE BEEST*.

Grey brown. Dorsal line, streak on face, outer side of limbs, black. Large triangular spot on the haunches whitish.

Antilope *Caama*, *Cuvier, Dict. Sci. Nat.* ii. 242, 1816.

A. (*Alcelaphus*) *Caama*, *Blainv. B. S. Phil.* 1816, 75; *Desm. Mam.* 467; *Fischer, Syn.* 474, 841; *Burchell, Trav.* i. 420.

Antilope (*Bubalides*) *Bubalis* (part.), *Licht. Berl. Mag.* vi. 163; *Schreb. t.* 277.

*Acronotus Caama*, *Gray, List Mamm. B. M.* 157; *Cat. Osteol. B. M.* 58.

*Boselaphus Caama*, *Gray, Ann. & Mag. N. H.* 1847, 233; *Knowsley Menag.* 20. t. 20. f. 2, young; *P. Z. Soc.* 1849, 140.

Antilope *Dorcas*, *Thunb. Mém. Acad. Pétersb.* iii. 316.

*Damalis acronotus Caama*, *H. Smith, G. A. K.* iv. 338. t. 197, v. 877.

*Bubale, Buffon, H. N.* xii. t. 38. f. 2; *Suppl.* vi. 135. t. 15.

*Harte beesten* eller *Dorcas*, *Sparrm. in K. V. Handl.* 1779, 151. t. 5, bad.

*Caama*, *Cuvier, Menag. Mus.* t.; *Rég. Anim.* i. 261; *Pallas, Misc.* 7; *Spicil.* i. 12 (not syn.).

Antilope *Senegalensis*, *Cuvier, Dict. Sci. Nat.*, from *Pennant*.

Antilope *Koba*, *Erzleb. Syn.* 293, from *Pennant*.

? *Senegal Antelope*, *Penn. Quad.* i. 103. t. 50. vig. 40, head.

*Harte beest*, *Duich at Cape*.

*Kaama*, *Hottentots*.

*Licama*, *Caffers*.

*Hab.* South Africa.

(Not in good state.) S. Africa. Part of Sir Hans Sloane's Museum.

Male. S. Africa. From the South African Museum.

Adult male. S. Africa. Presented by the Earl of Derby.

Male, young. S. Africa.

## OSTEOLOGY.

Frontal bone and horns. South Africa.

Frontal bone and horns, wide apart, very rough. South Africa.

Horns, with the head stuffed. South Africa.

Frontal bone, with the skin on. South Africa.

Horns. South Africa.

Two pair of horns. S. Africa. Mr. Warwick's Collection.

Skull, without lower jaw. S. Africa.

Nine pair of horns. S. Africa. From Mr. Argent's Collection.

# ICON.

Antelope Bubalis, *Hardw. Icon. ined. B. M.* n. 10,975. t. 164, 165.

Pennant figures the head and horns of this species under the name of *Senegal Antelope*, and erroneously refers to Buffon's figures of the horns of the *Koba* as representing the species, which has occasioned some confusion; for the *A. Senegalensis* (Cuvier, *Dict. Sci. Nat.* ii. 235) is an abbreviation, and *A. Koba* (Erxleben, *Syn.* 293) is a translation, of Pennant's description of this species. Pennant's specimen is said to come from Senegal, but he describes the nuchal line and the knees as black, and the figure indicates the dark colour on the face of the Cape species.

The *Hartebeest* has an extensive range; it is found everywhere in the flat and wooded districts between the Cape of Good Hope and the Tropic of Capricorn. Its movements are ungraceful, and give a notion of great exertion, but when urged by danger it shows no want of either agility or endurance. The flesh is esteemed.—*A. Smith.*

## 32. DAMALIS, *H. Smith.*

Horns lyrate, diverging, subcylindrical. Nose moderately broad, cervine, with a small bald moist muffle between and below the nostrils; an exposed tear-bag. *Female*: two teats.

*Damalis acronotus*, sp. (*Koba*), *H. Smith, Griffith A. K.* v. 182.

*Damalis*, *Gray, Ann. & Mag. N. H.* 1846, 233; *Knowsley Menag.*;

*Proc. Zool. Soc.* 1849, 140.

*Alcelaphus*, sp., *Fischer, Syn.*; *Turner, P. Z. S.* 1850.

*Bubalis*, sp., *Sundevall, Pecora*, 83.

*Gazella*, sp. (*pygarga*), *Blainv. B. S. Phil.* 1816; *H. Smith, G.*

*A. K.* v.; *Fischer, Syn.* 642.

\* *Horns recurved above, diverging from the base. Face dark in front.*

## 1. DAMALIS LUNATUS. The SASSAYBY.

Rufous, glaucous. Outer side of limbs dark.

*Antelope lunata*, *Burchell, Trav.* ii. 334, 591. fig.

*Damalis acronotus lunatus*, *H. Smith, G. A. K.* iv. 352. t. 198, v. 880.

*A. Alcelaphus lunata*, *Fischer, Syn.* 642.

*Acronotus lunatus*, Gray, *List Mamm. B. M.* 157.

*Alcelaphus lunatus*, Turner, *P. Z. S.* 1848.

*Damalis lunatus*, A. Smith, *Zool. S. Africa*, t. 31; Harris, *W. A. Africa*, t. 8, and head; Gray, *Cat. Osteol. B. M.* 57; *Ann. & Mag. N. H.* 1846, 233; Knowsley *Menag.* 21; *Proc. Zool. Soc.* 1849, 140.

*Bubalis lunata*, Sundevall, *Pecora*, 83.

Sassaybi, Daniel, *Afric. Scenery*, t.

*Hab.* S. Africa.

Female. S. Africa. From the South African Museum.

Male. S. Africa.

OSTEOLOGY. Burchell, *Trav.* ii. 591. fig.

Horns and skin of legs. South Africa. Presented by W. Burchell, Esq., LL.D.

Horns. S. Africa. From Mr. Warwick's Collection.

Two pair of horns. S. Africa. From Mr. Argent's Collection.

The *Bastard Hartebeest* inhabits between Latikoo and the Tropic of Capricorn. It lives in herds of six or ten in the flat or wooded districts. Its flesh is esteemed. Where not disturbed it is confiding and curious, but where hunted it becomes vigilant and shy.—A. Smith.

**\*\*** *Horns regularly lyrate, nearly parallel at the base, and then diverging and approaching at the tips. Face black marked. Crumen moderate.*

## 2. DAMALIS SENEGALENSIS. The KORRIGUM.

Reddish grey. Front of face from nose to occiput, a small spot behind the eyes, a small streak above the angle of the mouth, and streak on outside of the limbs above the knees, and tuft of the tail, black. *Very young*: uniform pale brown, without any dark marks.

*Damalis* (*Acronotus*) *Senegalensis*, H. Smith, *Griffith A. K.* v. t. 199. f. 3.

*Antilope Koba*, *Children in Denham & Clapperton's Travels* (not *Erleben*).

*Bubalis Koba*, Sundevall, *Pecora*, 83.

*Bubalis lunata*, Sundevall, *Act. Stockh.* 1842, 201, 243 (not Burchell).

*Damalis Senegalensis*, Gray, *Cat. Osteol. B. M.* 59; *Ann. & Mag. N. H.* 1846, 233; Knowsley *Menag.* 21. t. 21.

*Damalis Korrigum*, Gray, *List Mamm. B. M.* 158.

*Antilope Corrigum*, Ogilby, *P. Z. Soc.* 1836, 103; Gray, *List Mamm. B. M.* 158.

*A. Gazella Korrigum*, Lesson, *Nov. Tab. R. A.* 176.

*Alcelaphus Senegalensis*, Turner, *P. Z. S.* 1848.

*Hab.* West Africa; Gambia River, Macarthy's Island, Mr. Whitfield, called *Yonga*; Senegal; Senaar. Mus. Stockholm.

Young. Gambia. Presented by the Earl of Derby.

#### OSTEOLOGY.

Skull and horns. Bornou. Presented by Capt. Clapperton, R.N., and Major Denham. (The specimen figured by Col. H. Smith, and noticed by Mr. Children.)

Skull and horns. Bornou. Presented by Capt. Clapperton, R.N., and Major Denham.

Skull. Gambia. Presented by the Earl of Derby.

Mr. Whitfield informs me this species is found on Macarthy's Island, on the Gambia; they afford very good venison; are called *Yonga* or *Yongah* by the Ioliffs, and *Tan Rong* by the Mandingoes.

In *Denham & Clapperton's Travels* I regarded this species as the *Koba* of Buffon, and Colonel H. Smith and Dr. Sundevall are of the same opinion: but on comparing the six pairs of horns of this species which I have been able to examine with Buffon's figure and descriptions, I find them all longer and much thicker at the base than Buffon describes them; the thinner specimen (a female?) being 7 and the others 9 or  $9\frac{1}{2}$  inches in circumference, while that Buffon described is only 5 inches. The rings are also more elevated, and reach nearer to the top than in Buffon's figure. All the characters lead me to believe that the horns figured as those of the *Koba* by Buffon belong to *Damalis Pygarga*.

Colonel Hamilton Smith, in *Griffith's Animal Kingdom*, described and figured the heads brought home by Messrs. Denham and Clapperton as *Antilope Senegalensis*, but they are different from the one so called by Cuvier. Mr. Ogilby, in the *Proceedings of the Zoological Society* (1826, 103), proposed to call these heads *A. Corrigum*.

Under the name of *Antilope Koba*, Schinz (*Syn. Mam.* ii. 407) combines the *A. defassa*, Rüppell, *Damalis Senegalensis* and *Antilope adenota*, H. Smith, the *Koba* of Buffon, and the *Antilope Koba* or *Caama* of Erxleben.

\*\*\* *Horns regularly lyrate, parallel at the base. Face of the adult white.*

#### 3. DAMALIS PYGARGA. The NUNNI or BONTE BOC.

Purple red. Outer side of the limbs darker. Streak between horns, face, and rump above the tail, white. Temple and upper

part of throat whitish. Legs whitish, upper and lower part brown varied. Female: throat and under part of body white. Fawn pale yellowish brown.

Antelope Pygarga, *Pallas, Spic.* xii. 15 (not syn.); *Sparrm. Act. Holm.* 1780, 3.

A. (vera) Pygarga, *Licht. Berl. Mag.* vi. 166; *Gmelin, S. N.* i. 189; *Schreb. Saugth.* 1187. t. 273; *Desm. Mam.* 456; *Burchell, Trav.* i. 290, ii. 335.

A. Gazella Pygarga, *Blainv. B. S. Phil.* 1816, 75; *H. Smith, G. A. K.* v. 820; *Fischer, Syn.* 461, 629.

Alcelaphus Pygargus, *Turner, P. Z. S.* 1848.

Antelope pygargus, *Pallas, Spic.* i. 10.

Gazella Pygarga, *Gray, List Mamm. B. M.* 161.

Bubalis pygarga, *Sundevall, Pecora.*

Antelope Dorcas, *Pallas, Misc.* 6—not *Spicil.* i. 11.

Damalis Pygarga, *Gray, Ann. & Mag. N. H.* 1846, 233; *Knowsley Menag. t.*; *Proc. Zool. Soc.* 1849, 140.

White-faced Antelope, *Penn. Quad.* i. 93; *Shaw, Zool.* ii. 352.

Bonte bok or Pied Antelope, *Harris, W. A. Africa,* t. 17.

Antelope personata (Bonte bok), *H. Woods, Zool. Journ.* iv. 524, v. 2. t. 1, young, not arrived at its colour; *P. Z. S.* iii. 45.

Nunni, *Bushmen.*

*Hab.* S. Africa.

Horns, long and slender. Mr. Warwick's Collection.

#### OSTEOLOGY.

Koba, *Daub. in Buffon H. N.* xii. 268. t. 32. f. 2.

Skull. Cape of Good Hope. Presented by William Burchell, Esq., LL.D.

Horns. South Africa.

Two pair of horns. S. Africa. From Mr. Warwick's Collection.

Horns, ten pair. S. Africa.

Male.

Male and female. S. Africa. From Dr. Smut's Collection.

Young, pale brown. S. Africa.

Very young. S. Africa. From M. Verreaux's Collection.

Male, adult. S. Africa.

These animals are often brought to the Cape market for food.

The names *Kob* and *Koba* appear to be generic among the negroes for Antelopes. Colonel Smith, Professor Sundevall, and Mr. Children in *Clapperton's Travels*, have considered the horns figured by Buffon under the name of *Koba* the same as *Damalis Senegalensis* of this work. The comparison of six pairs of horns of that animal with Buffon's figure and description has led me to doubt the identification. I believe they are the horns of the

*Bontebok*, *D. Pygarga*; if so, all the following names which have been given to these horns must be regarded as synonyma of this species.

*A. Tragelaphus Senegalensis*, *Lesson*, *Nov. Tab. Règ. Anim.* 181.  
*Koba*, *Buffon*, *H. N.* xii. 210, 268. t. 32. f. 2, horns cop. *E. M.* t. 53. f. 2.

*Damalis Koba*, *J. Brookes*, *Cat. Mus.* 64, 1828.

? *Senegal Antelope*, *Penn. Syn.* 38. fig. at 39, head.

*Antilope Koba*, *Erl. Syst.* 293; *Desm. Dict. H. N.* ii. 187; *Fischer*, *Syn.* 463, 630.

*A. Gazella Koba*, *Blainv. B. S. Phil.* 1816, 75.

*Antilope Senegalensis*, *Cuvier*, *Dict. Sc. Nat.* ii. 235; *Desm. Mamm.* 457.

#### 4. DAMALIS ALBIFRONS. The BLESS BOCK.

Purple red. Front of face, spot between horns and on temples, the hinder edge of rump below the tail, white. Throat, stripe down the outer side of front of legs, brown.

*Antilope albifrons* (Bless bok), *Burchell*, *Travels*, ii. 335?; *Harris*, *W. Anim. Africa*, t. 21, and head.

*Bubalis albifrons*, *Sundevall*, *Pecora*.

*Damalis albifrons*, *Gray*, *Ann. & Mag. N. H.* 1846, 233; *Knowsley Menag.* 22. t. 22. f. 1, half-grown; *Proc. Zool. Soc.* 1849, 141.

*A. Pygarga*, part., *Mus. Paris*, 1851.

*Hab.* South Africa.

Dr. Burchell, when speaking of the *Bless bock*, proposed to call it *A. albifrons*, as the name *Pygarga* has been used for both the *Springer* and the *Bless bock*; but it is not certain if he intended by *Bless bock* this or the preceding species. Captain Harris's figure shows the distinction of the two species, and he applies Dr. Burchell's name to the one now described.

A half-grown specimen of this species, when compared with a similar-sized specimen of *D. Pygarga* in the same paddock, was darker, with a pale spot between the horns, separated by a dark spot from the white on the face; the temple was white, with a white spot; the legs had a brown stripe down the outer side of the front; and the throat and rump brown, the latter without any white spot.

\*\*\*\* *Horns unknown.*

#### 5. DAMALIS? ZEBRA. The DORIA.

Bright golden brown, with several black cross-bands narrow-  
 ing at the end. Outside of the fore- and hind-legs dark brown.

F 5

*Antilope*, n. s., *Bennett*, *P. Z. S.* 1832, 122.

*Antilope Zebra*, *Gray*, *Ann. Nat. Hist.* i. 27, 1836.

*Cephalophorus*? *Zebra*, *Gray*, *List Mamm. B. M.* 154.

*Antilope (Calliope)* *Doria*, *Ogilby*, *Proc. Zool. Soc.* 1836, 121  
(not described); *Frazer*, *Zool. Typica*, t.

*Antilope Zebrata*, *Robert*, *Echo du Monde Savante*, 1836; *Ger-  
vais*, *Dict. Sci. Nat. Supp.* i. 267.

*Damalis*? *Zebra*, *Gray*, *Knowsley Menag.*

*Canis* or *Viverra Zebra*, *Whitfield*, *MSS.*

*Antilope fasciata*?, *Geof. D. H. N.* 53.

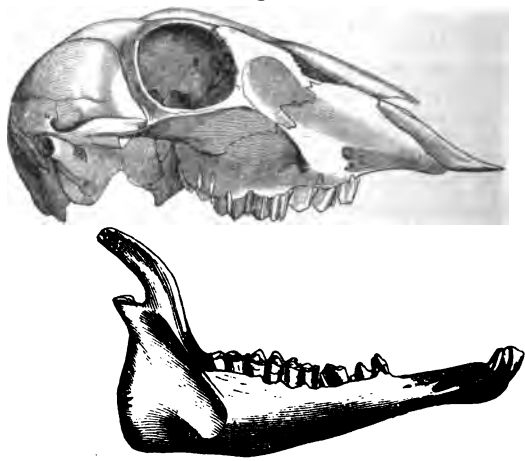
*Hab.* W. Africa.

Flat skin, without limbs. Sierra Leone.

Skins without head and feet are alone known; they are brought down the river by the negroes. In the *Catalogue of the Mammalia in the British Museum*, I have referred this species with doubt to *Cephalophus*. Mr. Ogilby (*P. Z. S.* 1836, 121) thinks it should be referred with the *Harness Antelopes* to *Calliope*. I am inclined, on account of the dark mark on the outside of the limb, to think it belongs to the genus *Damalis*. Mr. Whitfield believes it, on the authority of the negroes, to be a species of *Viverra*.

The specific name is supposed to be commemorative of Mrs.

Fig. 1.



Skull of *Eleotragus arundinacea*. Female (see p. 92).



Ogilby, whose christian name was *Doria*. In the *Catalogue of the Zoological Society* it is called the *Gilded Antelope*.

Section 2. Horns subangular, with a more or less distinct ridge on the front angle. Knee in the middle of the fore-leg—*Angulicornia*.

*Gray, Ann. & Mag. N. H.* 1846, 230.

Subtribe III. *Strepsicereæ*. Horns subspiral, inclined backwards. Crumen distinct. Nostrils near together in front. Fore-head flat. Males not bearded on the chin. Fur white banded or spotted. *Females*: teats 4, in a small udder.

Antilope, § *C. spiralibus*, *Gray in J. Brookes, Cat. Mus.* 63, 1828.

*Strepsicereæ*, *Gray, Ann. & Mag. N. H.* 1846, 230.

*Strepsiceres*, *Gray, Proc. Zool. Soc.* 1850, 142; *Knowsley Menag.* Antilope, part. (*Tragelaphus*), et *Damalis*, part. (*Boselaphus*, *Strepsiceros* et *Portax*), *H. Smith, G. A. K. v.* ; *Fischer, Syn.* 625.

*Strepsiceros* et *Portax*, *Turner, P. Z. S.* 1850.

*Bovina*, part. (*Portax*), *Sylvicaprina*, part., *Sundevall, Pecora.*

*Addax*, sp., *Laurill.*

*Bos*, part., *Wagler, N. Syst. Amph.* 32, 1830.

The animals of this subtribe are peculiar as being the only low-horned or Bovine Ruminants which are marked with white stripes and spots. The bands are not very distinct in the *Impofo* or *Eland*, but they are easily to be observed in the female, if it is looked at obliquely, which was brought home by Burke, and presented to the British Museum by the Earl of Derby. The skull, which somewhat resembles that of the Deer, has a rather small nasal opening, no suborbital pit, and only a small suborbital fissure.

Colonel H. Smith forms of the larger species three of his four subgenera of *Damalis*: he places the smaller kinds as a subgenus (*Tragelaphus*) of Antelopes.

Prof. Sundevall placed the genera here brought together in two different families; the genus *Portax* with the *Bovina*, and the others in the *Sylvicaprina*, or True Antelopes.

M. Agassiz has observed, that the horns of the *Strepsiceres* and the *Sheep* are twisted in the contrary direction. Mr. Ogilby has justly observed, that the right horn of the *Strepsiceres* is twisted in the same direction as the left horn of the *Sheep*, and *vice versâ*.

—*Trans. Zool. Soc.* iii. 57.

## SYNOPSIS OF GENERA OF STREPSICERÆ.

I. *Limbs equal.* African.a. *Nose cervine.* Neck with a linear mane.

1. STREPSICEROS. Horns spiral, keeled.
2. OREAS. Horns straight, with a spiral keel.

b. *Nose bovine.* Neck with long hair.

3. TRAGELAPHUS. Horns subtriangular, subspiral.

II. *Hinder legs short.* Asiatic.

4. PORTAX. Horns short, subtriangular.

I. The *African Genera* have large heavy horns, only the rudiment of a tear-bag, and the limbs nearly equal. Skull with "the nasal opening of moderate size; a suborbital fissure, but no fossa; the masseteric ridge not extending high; the auditory bulla swollen and prominent; the basioccipital bone with its anterior and posterior pairs of tubercles well developed, the former separated by a deep median groove; the median incisors expanded at their summits; the molars without supplemental lobes."—Turner.

Strepsiceros, Turner, P. Z. S. 1850.

Antilope et Damalis, part., H. Smith.

Sylvicaprina, Sundevall, Pecora.

A. *Horns with strong spiral keel.* Nose cervine, hairy. Muffle small, between and under the front half of the nostrils. Body large, heavy. Neck maned.

## I. STREPSICEROS.

Horns large, heavy, spirally twisted, with a distinct, raised, rounded keel in front. Tear-bag a naked space. Throat with a central linear mane. Females hornless. (Skull, t. 17. f. 1, 2.)

Damalis Strepsiceros, H. Smith, Griffith A. K. v. , 182.

Strepsiceros, Gray, Ann. & Mag. N. H. 1846, 230; Turner, P. Z. S. 1850.

Boselaphus, Lesson, Nov. Tab. R. A. 181, 1842.

Risia, Laurill.

Calliope, sp., Ogilby.

1. **STREPSICEROS KUDU.** The **EECHLONGOLE** or **KOODOO.**  
(t. 17. f. 1, 2.)

Grey, white striped. Face with a broad, white, lunate cross band.

Antelope *Strepsiceros*, *Pallas*, *Misc.* 9; *Spic.* i. 17, xii. 19; *Gmelin*, *S. N.* i. 192.

A. (gazella) *Strepsiceros*, *Licht. Berl. Mag.* vi. 172; *Schreb. Saugth.* 1207. t. 267; *Burchell, Trav.* i. 267, 337, 374.

A. (*Tragelaphus*) *Strepsiceros*, *Blainv. B. S. Phil.* 1816, 75; *Desm. Mam.* 468; *Fischer, Syn.* 472. 640.

*Strepsiceros Capensis* or *Koodoo*, *Harris, W. A. Africa*, t. 20, and head.

*Damalis* (*Strepsiceros*) *Strepsiceros*, *H. Smith, G. A. K.* v. 883.

*Calliope Strepsiceros*, *Ogilby, P. Z. Soc.* 1836, 138.

*Strepsiceros excelsus*, *Sundevall, Pecora*, 71.

*Bos Strepsiceros*, *Aldrov. Bisulc.* 368. fig. 369.

*Capra Strepsiceros*, *Jonst. Quad.* t. 24; *Houtt. Nat. Hist.* iii. t. 26. f. 1, 2.

*Strepsiceros kudu*, *Gray, Cat. Mam. B. M.* 155; *Osteol. B. M.* 59.

*Condoma*, *Buffon, H. N.* xii. 301. t. 39. f. 1, 2 (cop. *E. M.* t. 56. f. 2); *Supp.* vi. t. 13.

*Coudu*, *Vosmaer, Besch.* 1783, t.

*Cerf du Cap de Bonne Esperance*, *Colini, Comm. Palat.* i. 487. t.

*Afrikanischer Kutu*, *Knorr, Dêlic.* iii. t. K.

*Striped Antelope*, *Penn. Syn.* 31. *Quad.* i. 88. t. 14; *Shaw, Zool.* ii. 324. t. 185; *Daniel, African Scenery*, t.

*Knorr, Dêlices*, i. t. K. 1. f. 1, t. K. v. f. 1, t. K. xi.

*Hab. S. Africa.*

In bad state. Cape of Good Hope. Presented by the College of Surgeons.

Male. Cape of Good Hope. Presented by the Earl of Derby.

**OSTEOLOGY.** *Skull*, t. 17. f. 1, 2.

*Condoma*, *Daub. Buffon H. N.* xii. t. 39.

Three pairs of horns. South Africa.

Frontal bone and horns. South Africa.

Two skulls and horns. South Africa.

Head and horns. Presented by the Trustees of the Hunterian Collection.

Single horn of young. South Africa.

\*Skull, female. S. Africa.

Skull, with horns, male. S. Africa. From Mr. Argent's Collection.

*Var. 1. Smaller.*—*Mus. Ind. Comp. Lond. and Frankfort.*  
*Antilope Tendall, Rüppell, Abyssinia, 22; Fischer, Syn. 475.*  
*Antilope chora, Rüppell, Abyssinia, 22; Fischer, Syn. 475.*  
*Hab. Abyssinia.*

*Var. 2. Lighter and smaller.*  
*Koodoo var., Oswell, Journ. Geog. Soc. xx. 150.*  
*Hab. Banks of River Zonga, Oswell.*

## 2. OREAS.

Horns large, straight or slightly curved, bent back from the forehead, with a strong, raised, rounded spiral keel. Throat with a longitudinal crested dewlap. Crumen —. Females with smaller, thinner, less keeled horns. Skull, t. 17. f. 3, 4.

*Oreas (Oreades), Desm. Mam. 471; Lesson, N. Tab. R. A. 181.*  
*Boselaphus, sp., Blainv. Bull. S. Phil. 1816; Desm. Mam.*  
*Damalis (Boselaphus), H. Smith, Griffith A. K. v. 182.*  
*Boselaphus, Gray, Ann. & Mag. N. H. 1846, 230.*  
*Damalis, Sundevall, Pecora, 74.*  
*Bubalides, sp., Licht. Berl. Mag. vi. 153, 1814.*

### 1. OREAS CANNA. The IMPOOFO OF ELAND.

Pale brown, nearly uniform, with very indistinct, narrow white stripes on the sides.

*Antilope oreas, Pallas, Spic. Z. xii. 17; Gmelin, S. N. i. 190.*  
*A. Bubalides oreas, Licht. Berl. Mag. vi. 153; Schreb. Saugth. 1153. t. 256.*  
*A. Oreas oreas, Desm. Mam. 471; Burchell, Trav. i. 248.*  
*A. Boselaphus oreas, Blainv. B. S. P. 1816, 75; Fischer, Syn. 477. 644.*  
*Boselaphus Oreas, Gray, Cat. Mam. B. M. 155; Cat. Osteol. B. M. 59; Ann. & Mag. N. H. 1846.*  
*Boselaphus Canna, Gray, Cat. Mam. B. M. 155, female.*  
*Antilope Oryx, Pallas, Misc. Z. 9; Spic. Z. i. 15; Forster, MSS. 55; Erxleb. Mam.*  
*Damalis Boselaphus Canna, H. Smith, G. A. K. iv. 198. t. 181. f. 5, horn ♀; v. 882.*  
*Antilope Canna, Fischer, Syn. 644.*  
*Afrikanisches Elend thier, Kolbe, Vorgeb. Hoffn. i. 145. t. 3. f. 1.*  
*Coudou, Buffon, H. N. xii. 357. t. 46 b, horn.*  
*Canna, Buffon, Suppl. vi. t. 12 ♂ adult; Cuv. R. A. i. 263.*  
*Eland, Sparrm. Kongl. V. Handl. 1779, 155. t. 5; Harris, W. A. A. t. 6 and head; Vosmaer, Besch. 1785, t.*  
*Cape Elk, var., Daniel, African Scenery, t.*

Indian Antelope, *Penn. Syn.* 26; *Quad.* i. 78; *Shaw, Zool.* ii. 319. t. 183; *Barrow, Travels*; *Licht. Reise*, i. 155, ii. 39. 462; *Burchell, Travels*.

Elandt, *Dutch at Cape G. H.*

Canna t'Gann or Y'gann, *Hottentots*.

Impophos or Poffo, *Caffers*.

Empophos, *Zimmerm. Geog. Zool.* ii. 109; *Lobo, Abyss.* i. 293.

Bastard Eland, *Dutch at Cape G. H.*

*Hab.* S. Africa.

Skin and horns, in bad state. S. Africa. Presented by William Burchell, Esq., LL.D.

Female. S. Africa.

Male and female. South Africa. Presented by the Earl of Derby.

OSTEOLOGY. *Skull*, t. 17. f. 3, 4.

Coudou, *Daub. in Buffon H. N.* xii. t. 46. f.

Three pairs of horns, separate. South Africa.

Frontal bone and horns. South Africa.

Skeleton. S. Africa. Presented by the Earl of Derby.

Horns on base of skull. S. Africa.

Horns and skin of nape. Cape of Good Hope. Presented by William Burchell, Esq., LL.D.

Separate horn of an adult. (*Antilope Canna* of Col. H. Smith, and figured by Griffith, *A. K.* t. 181. f. 5.)

ICON.

Horns.—*Hardw. Icon. ined. B. M.* 10,975. t. 166.

A. Orix.—*Forster, Icon. ined. B. M.* i. t. 30.

Mr. Livingston observes, "It is a well-ascertained fact, that the *Eland*, *Gemsbock*, *Duiker*, *Steinbock*, &c., can live for months together without water. The *Eland* becomes enormously fat during the driest season, viz. the winter, when all the herbage is withered and so dry that it crumbles to powder in the hand; and yet the stomach of all these animals, when opened, contained a good deal of moisture. Our party was well supplied with Eland flesh during our passage through the desert; and it being superior to beef, and the animal as large as an ox, it seems strange it has not yet been introduced into England."—*Journ. Geog. Soc.* xx. 139, 1850.

They have bred at Knowsley, but are ravenous feeders, and liable to an epidemic.

## 2. OREAS DERBIANUS. The GINGI JONGA.

Pale reddish brown. Front of the face, the neck, the front part of the under side, a spot on the front and hinder side of the

upper part of the fore-leg, and the dorsal streak, dark black. The belly, the front and back edge of the upper part of the legs, and under side of tail, whitish. A broad half-collar in front of the shoulder, narrowed above. Fourteen or fifteen narrow, waved, perpendicular streaks on each side of the body white. Withers with intermixed black hairs. Throat of female dark brown; crown reddish brown.

*Boselaphus Derbianus*, Gray, *Ann. & Mag. N. Hist.* xx. 286; *Silliman, Amer. Journ.* v. 279.

*Oreas Derbianus*, Gray, *Knowsley Menag.* t. 3 and 4.

*Hab.* Western Africa; River Cassaman.

Horns. Gambia. Presented by the Earl of Derby.

Horns. Gambia.

*B. Horns subangular, obscurely keeled. Nose bovine. Muffle rather large, bald between and beneath the nostrils, and on a narrow band up the middle of the hairy upper lip. Neck with longer hair, forming a mane. Body high. Legs slender. Hoofs and false hoofs small.*

### 3. TRAGELAPHUS.

Horns conical, tapering, with only one spiral turn, subangular, very obscurely angular in front at the base, with a keel above arising from the hinder part of the base. Tear-bag distinct. Neck and throat with longer hair. Nape and back with a more or less distinct mane. Legs slender. Hoofs and false hoofs small. *Females* hornless. Skull, t. 18. f. 1, 2.

Antelope (*Tragelaphus*), sp., *A. Smith, Griffith A. K.* v. 182; *Lesson, N. Tab. R. A.* 181.

*Tragelaphus*, Gray, *Ann. & Mag. N. H.* 1846, 230.

*Calliope*, *Ogilby, Proc. Z. Soc.* 1836; *Rüppell, Verz. Senck. Samml.* 1845, not of Swainson.

*a. Horns large, elongate. Face with an arched band between the eyes. Back cross-banded. Euryceros.*

*Strepsiceros*, sp., *Ogilby.*

*Euryceros*, Gray, *Knowsley Menag.*

### 1. TRAGELAPHUS EURYCERUS. THE BROAD-HORNED ANTELOPE.

Head pale brown. Broad band before the eyes, and two large spots on cheeks, chin, and front of upper lip, white. Horns

elongate, thick, scarcely bent forward at the tip. Throat with long black hairs.

Antelope, sp., *Afzelius*, *Nov. Act. Upsal.* vii. 269. t. 8. f. 3; *H. Smith*, *G. A. K.* v. 361.

Antelope *Eurycerus*, *Ogilby*, *P. Z. Soc.* 1836, 120; *Waterhouse*, *Cat. Mam. Zool. Soc.* 391.

*Tragelaphus* (*Euryceros*) *Eurycerus*, *Gray*, *Knowsley Menag.* t. , head.

*A. Tragelaphus Eurycerus*, *Lesson*, *N. Tab. R. A.* 181.

*Hab.* W. Africa.

#### OSTEOLOGY.

Horns. From Mr. Warwick's Collection.

The horns are very similar to those of *T. Angasii*, but the head is considerably larger, nearly as large as that of the *Kudu*, and the horns are thicker and larger; they are 27 inches long in a straight line from base to tip, and 9 inches in circumference at the base. The hair of the head is also paler and more uniformly coloured, and with very large white spots on the cheek, much larger than those of the *Kudu* or of *T. Angasii*. The throat has a distinct mane of blackish rigid hairs. The muffle is very like that of *T. Angasii*, and larger than that of the *Kudu*. The skull is imperfect; it has no appearance of any suborbital pit or slit.

*Var.* 1. Skull about two-thirds the size of the former.

Antelope from Bight of Biafra, *Allen*, *Proc. Zool. Soc.* 1848, 88;

*Turner*, *P. Z. S.* 1850.

*Hab.* Bight of Biafra.

A skull, with horns. Bight of Biafra. Presented by Capt. Allen, R.N. (The specimen noticed in *P. Z. S.* 1848, 88.)

#### 2. *TRAGELAPHUS ANGASII*. The INYALA.

Black. Back with a vertebral streak and four or five bands on each side. Head blackish. Narrow band before eyes and small spot on cheeks, front of upper lip and chin, white. Forehead and feet bay. Throat with a mane of long, rigid, blackish hair. Horns rather slender, elongate, rather bent forward at the tip. Female bay, with many white bands. Muffle band small, only extending half-way up between the nostrils and about one-third the length beneath them, and entirely separated from the edge of the upper lip by a broad, hairy band (with a slight central groove). The horns are 8 inches in diameter at base, rather slender, elongate, black with white tips, rounded in front, with a very obscure indication of a keel, and with a keel arising from the back edge of the horns, on the inner side of the upper part, rather bent forwards in front.

*Tragelaphus Angasii*, Gray, *Proc. Zool. Soc.* 1848, 89. t. 4, 5.  
*Hab.* S. Africa; Port Natal; Angas, Proudfoot.

A skin of male and female without feet. S. Africa; Port Natal. Mr. Proudfoot's Collection.

The slenderness of the horns and smaller size of the head, and the dark colour and small size of the bands and spots on the head, chiefly distinguish the head of this species from *T. Euryceros*.

*b. Horns moderate, rather short. Face without any cross band.*  
*Tragelaphus.*

† *Back with cross bands and lateral streaks.*

### 3. TRAGELAPHUS SCRIPTA.

Pale bay. Back with four cross bands and a central white streak. Haunches white spotted. Cheek with two white spots. Spot on chest, nose, feet, and spots on the legs, blackish. Dorsal streak and end of tail black. *Adult*: chest, outside of shoulder, and haunches and legs, black.

The *adult males* (four years old) have a high ridge of long, coarse, white hair extending the whole length of the back to the tail.—*Dict. Sci. Nat.* t.; *Knowsley Menag.* t.

*Antelope scripta*, Pallas, *Misc.* 8; *Spic.* i. 15, xii. 18.

*A. vera scripta*, Licht. *B. M.* vi. 169; Gmelin, *S. N.* i. 191; Schreb. *Saugth.* 1212. t. 258.

*A. (tragelaphus) scripta*, Blainv. *B. S. Phil.* 1816, 75; *Desm. Mam.* 470; H. Smith, *G. A. K.* v. 859; Fischer, *Syn.* 473. 640.

*Tragelaphus scriptus*, Gray, *Cat. Mamm. B. M.* 160; *Cat. Osteol. B. M.*; *Knowsley Menag.* t. ♂ ♀; *Ann. & Mag. N. H.* x. 267, 1843.

*Antelope maculata*, Thunb. *Mem. A. Petersb.* iii. 313.

*Antelope (Tragelaphus) phalerata*, H. Smith, *G. A. K.* v. 860; Fischer, *Syn.* 640.

*Calliope scripta*, Rüppell, *Verz. Senck. Samml.* 182, 1845.

Guib, *Negro at Senegal*; Buffon, *H. N.* xii. 305, 307. t. 40, jun., 41. f. 1, horn; F. Cuvier, *Mam. Lithog.* t.; *Dict. Sci. Nat.* t. ♂ adult.

Harness *Antelope*, Penn. *Syn.* 27; *Quad.* i. 81; Shaw, *Zool.* ii. 322. t. 186.

Bontebock, *Dutch in Africa.*

Oualofes or Zalofes, *Negro in Gambia.*

*Hab.* West Africa; Senegal and Gambia.

Female. W. Africa. Presented by the Earl of Derby.



## OSTEOLOGY.

Guib, *Daub. in Buffon Hist. Nat.* xii. t. 41. f. 1.

Skull of female with the intermaxillaries reaching to the nasal. Suborbital pit none. Nasals, slit up each side in front.

Varies, some having seven, and others nine white cross bands, and some are spotted and others not. They breed together at Knowsley, and produce specimens different in these respects from their parents.

## 4. TRAGELAPHUS DECULA. The DECULA.

Grey brown. Back with three or four indistinct cross bands. Arched streak on upper part of side, a few spots forming an arch on the haunches, dorsal line, streak on nose and on front of fore legs, blackish.

Antelope Decula, *Rüppell, Fauna Abyss.* t. 4.

Calliope Decula, *Rüppell, Verz. Senck. Samml.* 182, 1845.

Tragelaphus Decula, *Gray, Cat. M. B. M.* 160; *Knows. Menag. Hab. Africa; Abyssinia.*

Male. Abyssinia. From the Frankfort Museum.

Var. Back without the cross bands.

Hab. Africa; Abyssinia; *Rüppell.*

†† Back without any cross bands or lateral streaks.

## 5. TRAGELAPHUS SYLVATICA. The BOSCH BOCK.

Blackish brown. Head pale brown. Band across forehead black. Small spot on haunches, larger spot on insides of legs and on feet white. Dorsal line longly crested, black, white varied. Female paler brown. Young pale bay.

Antelope sylvatica, *Sparrm. Act. Holm.* 1780, iii. 197. t. 7; *Gmelin, S. N.* i. 192.

A. (*Gazella*) sylvatica, *Licht. Berl. Mag.* vi. 173; *Schreb. Saugth.* 1209. t. 257; *Thunb. Mem. Petersb.* iii. 315; *H. Smith, G. A. K.* v. 858.

A. *Tragelaphus sylvatica*, *Blainv. B. S. Phil.* 1816, 75; *Desm. Mam.* 469; *Fischer, Syn.* 472. 640; *Harris, W. A. Afr.* t. 26.

*Tragelaphus sylvaticus*, *Gray, Cat. Mamm. B. M.* 160; *Cat. Osteol. B. M.* 59; *Knowsley Menag.*

Calliope sylvatica, *Rüppell, Verz. Senck. Samml.* 182, 1845.

Bosbok, *Allam, Buff. H. N.* v. 35. t. 15; *Suppl. vi.* t. 25; *Shaw, Zool.* ii. 348.

Forest Antelope, *Penn. Quad.* i. 86.

Bosch bock, *Dutch at Cape.*

Hab. South Africa.

Skin (bad state). S. Africa. Presented by W. Burchell, Esq., LL.D.

Female and males. S. Africa.

Young. From M. Verreaux's Collection.

Half-grown female. S. Africa.

Var. 1. Smaller. Horns shorter, less diverging and more ascending.

Serolomootlooque (*Antilopus Roualeynei*), *Roualeyn Gordon Cumming*, *Hunter's Life S. A.* ii. 168, 178, 179.

Hab. Limpopo. Head Mus. Cumming.

#### OSTEOLOGY.

Base of skull, with horns.

Pair of horns, separate.

Horns. S. Africa. From Mr. Warwick's Collection.

The two pairs of horns, named by Colonel H. Smith *Boselaphus canna* (a, b, in the *List of Mamm. Brit. Mus.* 155); one, presented by Dr. W. Burchell, is certainly the horns of this species, and the other appear to be those of a young male, *Strepsiceros Kudu*.

II. In the *Asiatic Strepsiceros* the horns are short, conical, angular, subspiral, with an obscure oblique ridge. Tear-bag deep, longitudinal. The hind leg much shorter than the fore; shoulder higher than rump. The nose bovine, with a large moist muffle. Skull with "the nasal opening rather small, with the nasal bones small and narrow; a minute suborbital fissure; no fossa, but a smooth line upon the lacrymal bone; the masseteric ridge not extending high; the auditory bulla moderate, bulbous, compressed; the basioccipital bone with the posterior tubercles moderately developed, the anterior ones scarcely at all; the molars with supplemental lobes. The smooth line upon the lacrymal bone terminates in a small foramen, but one side is continued for some distance forwards upon the maxillary bone, where it terminates in the same way."—Turner.

*Asiatic Strepsiceros*, Gray, *Knowsley Menag.*; *Proc. Zool. Soc.* 1850, 146.

#### 4. PORTAX.

The Character of Section.

*Damalis* (Portax), H. Smith, *Griffith A. K.* v. 182; Fischer, *Syn.* 625; J. Brookes, *Cat. Mus.* 64, 1828.

Portax, Gray, *Ann. & Mag. N. H.* 1846, 230.

*Antilope Boselaphus*, sp., Blainville, *Bull. Soc. Phil.* 1816.

Antilope Bubalides, *Licht. Berl. Mag.* vi. 164.  
 Tragelaphus, *Ogilby, P. Z. Soc.* 1836.

Fig. 2.



Skull of *Portax Tragocamelus*.

# 1. PORTAX TRAGOCAMELUS. The NILGHAU.

Grey. Rhombic spot on the forehead and above the hoofs black, and white ringed; tail end black. *Female* browner. *Young* dull reddish fawn. Lower part of legs brighter. Under lip, spot on jaw, and line along the belly, on outside of leg, and fore part of hock, white. Tip of tail, line on back, of nose, and on front of legs, black.

Antilope Tragocamelus, *Pallas, Misc. Zool.* 5; *Spic. Zool.* i. 9, xii. 13; *Gmelin, S. N.* i. 184.

Antilope picta, *Pallas, Spic.* xii. 14; *Gmelin, S. N.* i. 184; *Schreb. Saugth.* 1159. t. 262, 263 A, 263 B; *Desm. Mam.* 471; *Wolf. Abbild.* ii. 57. t. 16; *F. Cuvier, Mam. Lithog.* t. ; *Fischer, Syn.* 476. 645; *Bennett, P. Z. S.* 1831, 37.

A. Boselaphus picta, *Blainv. B. S. Phil.* 1816, 75.

Antilope albipes, *Erxl. Mam.* 280; *Zimmerm. Geog. Gesch.* ii. 113.

A. Bubalides Tragocamelus, *Licht. Berl. Mag.* vi. 164.

Portax Tragocamelus, *Gray, Knowsley Menag.* 28. t. 29.

- Damalis picta* (Nylgau), *J. Brookes, Cat. Mus.* 64, 1828.  
*Antelope leucopus*, *Forst. MSS.*; *Zimmerm. Zool.* 541.  
*Portax Tragelaphus*, *Sundevall, Pecora.*  
*Damalis* (*Portax*) *Risia, H. Smith, G. A. K.* v. 884.  
*Portax picta*, *Gray, Cat. Mamm. B. M.* 154; *Cat. Osteol. B. M.* 59.  
*Tragelaphus Hippelaphus*, *Ogilby, Proc. Zool. Soc.* 1836, 138.  
The Nylghau, *Hunter, Phil. Trans.* lxi. 170. t. 5 ♂, cop. *Naturf.* vii. 236. t. 2.  
Neelghau, *Antelope Hippelaphus, Ogilby in Royle's Himal.* i. 73.  
*Hippelaphus, Aristotle, Hist. Anim.* ii. c. 5.  
Nilghau, *Shaw, Zool.* ii. 327. t. 189.  
Neelghae, *Ogilby, P. Z. S.* 1836, 338.  
Nilghaut, *Buffon, H. N. Supp.* vi. 101. t. 10 ♂, t. 11 ♀, jun.;  
*Cuvier, R. A.* i. 264; *F. Cuvier, Mam. Lithog.* t.  
White-footed Antelope, *Penn. Syn.* 29. t. 6. f. 1, 2; *Quad.* i. 83. t. 13.  
Biggel, *Mandelslo Itin.* i. 122, 1658.  
*Tragelaphus Caili, Ray, Quad.* 82?  
Quadruped from Bengal, *Parson, Phil. Trans.* xliii. 465. t. 3. f. 9.  
Hindustan Antelope, *Penn. Syn.* 29; *Quad.* i. 83; *Shaw, Zool.* ii. 329. t. 190.  
*Hab. India.*  
Young. India. Presented by the Zoological Society.  
Skin of head. India.

OSTEOLOGY. *Skull*, fig. 2. p. 141.  
*Skull.* India.

# ICON.

Neelghau, *Hardw. Icon. ined. B. M.* n. 10,975. t. 149 ♀, n. 10,974. t. 90, 96.

Subtribe IV. *Capreae*. Forehead convex, elevated behind. Chin of males bearded. Suborbital sinus none. Horns erect, compressed, curved backwards and rather outwards, and furnished with a longitudinal keel in front, deeper than wide at the base, and with transverse ridges in front. Hoofs four-sided, scarcely higher before than behind. The skull has "a small suborbital fissure, no fossa; the masseteric ridge ascending high before the orbit; the auditory bulla prominent and compressed; the basioccipital flat, with its processes developed; the middle incisors not expanded; the molars without supplemental lobes."  
—Turner.

"The occipital plane of skull forms an acute angle with fron-

tal plane. Cores of horns thick, porous, cellular. Horns seated superiorly on the crest of the forehead, and by their union covering the top of the head. Canines wanting. Teats 2, rarely 4."  
—Hodgson.

The males have a strong stench; they butt first raising themselves on their hind-legs and then coming down sideways against their enemies.

Capræ, Gray, *Ann. & Mag. N. H.* 1846, 230.

Capridæ et Bovidæ, part., *Ogilby, P. Z. S.* 1836.

Ovesidæ, part., *Lesson, Nov. Tab. R. A.* 182.

Hircidæ, *J. Brookes, Mus. Cat.* 72, 1828.

Hircus, *Rafin. Anal. Nat.* 56, 1815.

Capra, *Blainv. Bull. Soc. Phil.* 1816, 76; *Sundevall, Pecora*, 90.

Bos, part., *Wagler, N. Syst. Amp.* 32, 1830.

Mr. Hodgson, in his remarks on the Craniological character of *Ovis* and its allies, observes, "That the great depth or extent of the postæal plane of the skull (comprehending half the frontal and all the parietal bones), and the acute angle it forms with the antæal plane in the genus *Ovis*, will be found to be characters of more permanence and moment in separating this genus and *Capra* from the nearest adjacent groups of Ruminants, than most of the diagnostics now employed. I subjoin an outline of the typical Antilopine and Cervine form of skull on one hand, and that of the normal form of *Ovis* and *Capra*. Of these forms, *Cervus* and *Ovis* represent the extremes, and *Antilope* and *Capra* the means; but there is a regular gradation from *Cervus* to *Antilope*, from it to *Capra*, and from it again to *Ovis*."—*J. A. S. B.* x. 234. t. 2.

Mr. Hodgson, in his remarks on the genera *Capra* and *Ovis*, observes, "The males not being odorous is one of the best characters to separate the Sheep from the male Goats, which are always odorous."—*J. A. S. B.* iv. 491, 1835; x. 234, 1841.

The horns of some domestic varieties have an inclination to twist more or less spirally, like some varieties of *Sheep* and *Strep-siceres*.

The keel of the horns of the Sheep, and especially of the Goats, is on the inner part of the front edge of the horns; but in the Marbur or Snake-eater of Afghanistan the strongest keel which forms the spiral ridge arises from the hinder part of the inner side of the horns, the front one being obscure.

The hybrid produce of the Sheep and Goat are fertile, black-faced, and differ little in form from the black-faced Sheep. The intercourse is stated to be common.—*Muirhead, Statistical Acc. Parish of Urr.* xi. 66; *Fleming, Phil. Zool.* ii. 198; see also *Cuvier, R. A.* i. 267.

## SYNOPSIS OF GENERA OF CAPRÆ.

A. *Muffle naked.*

1. **HEMITRAGUS.** Horns trigonal, compressed, and knotted in front.
2. **KEMAS.** Horns square, flat, and cross-ridged in front.

B. *Muffle hairy.*

3. **ÆGOCEROS.** Horns roundish, conical.
4. **CAPRA.** Horns square, flat, and nodose in front.
5. **HIRCUS.** Horns trigonal, compressed, sharp-edged, and knotted in front.

A. *Muffle naked.*1. **HEMITRAGUS.**

Nose cervine. Muffle small, moist between the nostrils. Horns short, recurved, compressed, triangular, shelving on the outer side, and nodose in front. Interdigital and suborbital pores none. Tail very short. *Female*: horns smaller. Teats 4. *Male* not bearded, neck maned; odour like the Goats.

*Hemitragus*, sp., *Gray, Ann. & Mag. N. H.* 1846, 230; *Knowsley Menag.*; *Sundevall, Pecora*, 101.

*Kemas*, *Ogilby, P. Z. Soc.* 1836.

*Kemas*, sp., *Lesson, Nov. Tab. R. A.* 182.

*Hemitragus*, b, *Gray, Knowsley Menag.* 31.

1. **HEMITRAGUS JEMLAICUS.** The JHARAL OF TEHR.

Brown or ashy. Dorsal streak and feet black.

*Capra Jemlaica*, *H. Smith, G. A. K.* iv. . t. ; *Gray, Cat. Mamm. B. M.* 168.

*Capra Jemlahica*, *H. Smith, Griff. A. K.* iv. 308. t. , v. 872; *Fischer, Syn.* 649.

*Capra Jharal*, *Hodgson, Asiat. Res.* 1833, t. 3; *Journ. Asiat. Soc. Beng.* i. 347; iv. 1835, 491; v. 259; *P. Z. S.* 1834, 99-106; *Schinz, Verz.* ii. 462.

*Capra quadrimammis vel Jharal*, *Hodgson, J. A. Soc. Beng.* 1836, 254. x. 913; *Calcut. Journ. N. H.* iv. 291.

*Hemitragus Jemlaicius*, *Hodgson, Zool. Nep. ined.*; *Gray, Knows. Menag.* 32; *Cat. Osteol. B. M.* 60; *Hodgson, Coll. B. M.* 28.

*Hemitragus iharal*, *Sundevall, Pecora*, 101.

*Hemicapra Jemlaicus*, *Hodgson, Zool. Nep. ined.* t.

*Semicapra Jemlaicus*, *Hodgson*.

Kemas Jemlaica, *Waterh. Cat. Mus. Z. S.* 43, 1838.

Kemas Jemlaicus, *Blyth, Ann. N. H.* vii. 259, *note*.

Kemas iharal, *Lesson, N. Tab. R. A.* 182.

*Capra Ægagrus* var., *Hodgson, P. Z. S.* 1833, 105.

*Capra Ægagrus tubericornis* (part.), *Schinz. Verz.* ii. 467; *Wagn.*

*Supp.*

Thar, *Ogilby in Royle's Flora*, i. 73.

*Hab.* India; Nepal, the Kachar, or northern hilly region.

An adult specimen, blackish.

An adult specimen, reddish brown, long hair of neck and back whitish.

A half-grown specimen, pale brown.

A young specimen.

Male, in winter fur. Nepal. Presented by B. H. Hodgson, Esq.

#### OSTEOLOGY.

Head and horns. Nepal.

Base of skull, with horns. Nepal.

Skull and horns. Nepal.

Basal part of skull, and horns of female. Nepal.

Skull of a young female. Nepal. Presented by B. H. Hodgson, Esq.

Broken skull of a young male. Nepal. Presented by B. H. Hodgson, Esq.

Bones of body. Nepal. Presented by B. H. Hodgson, Esq.

Bones of body, young. Nepal. Presented by B. H. Hodgson, Esq.

#### ICON.

Drawing of male, female and young.—*Hodgson, Icon. ined. B. M.* t. 165.

Drawing of male and female.—*Hodgson, Icon. ined. B. M.* t. 166.

Drawing of male.—*Hodgson, Icon. ined. B. M.* t. 167.

Drawing of male, with details of head.—*Hodgson, Icon. ined. B. M.* t. 168; copied with more details of head, t. 170.

Drawing of male.—*Hodgson, Icon. ined. B. M.* t. 169.

Drawing of skull of young female.—*Hodgson, Icon. ined. B. M.* t. 187. f. 1, 2.

“The *Jharals* inhabit the loftiest mountains of India, in the most inaccessible bare crags beyond the forest, close to the perpetual snows. They feed in the open glades below such crags at early morning and evening, returning in the day to their awful fastnesses. They are gregarious, in flocks of twenty or thirty,

but sometimes of forty or fifty. If alarmed when feeding, they go off at speed with a noise like thunder, but anon halt to gaze on the intruder, whose shot sends them off again under the guidance of an old male, whom they follow blindly. They rut in winter, and the female gestates six months, producing one young in June or July. They are more dauntless and skilful climbers than the Wild Sheep. If they can but touch a rough edge or crevice now and then, they will run up nearly perpendicular precipices of many feet elevation, and they will stand on a bit of rock not larger than one's palm, looking confidently down over sheer space, with not a shrub to break the awful absence of rest for the foot.

"The *Jharal* breeds with the domestic Goat, and perhaps more nearly resembles the ordinary model of the tame than any wild species yet known."—*Hodgson, J. A. S. B.* iv. 491, 1839.

"I never could get any progeny from the Goats by the *Jharal*, though my male had commerce with Goats of several breeds repeatedly during the six years he lived with me, quite tame and going abroad with the Sheep and Goats."—*Hodgson*.

"In February 1842, a male *Jharal* in possession of the Court of Nepal had intercourse with a female *Cervus Axis*, which in July produced a young hybrid of mixed appearance, but more like the mother than the father, which lived and grew up a fine animal; I saw it last in October 1843. I note the circumstance as a strong corroboration of the affinity of the *Hemitragus* to the *Deer*, which is indicated by the four teats and moist muzzle."—*Hodgson*.

## 2. KEMAS.

Nose cervine. Muffle small, moist between the nostrils. Horns short, recurved, thick, subquadrangular, flat in front, and rounded on the outer side, closely ringed. Interdigital pores and suborbital pores none. Hair short, adpressed. Tail —. Male bearded. Odour like Goats. *Female*: horns smaller, very like male.

*Hemitragus* (part.), *Gray, Ann. & Mag. N. H.* 1846, 230; *Sundevall, Pecora*, 101.

*Hemitragus*, § a, *Gray, Knowsley Menag.* 31.

*Kemas*, part., *Ogilby, Proc. Zool. Soc.* 1837, 81.

### 1. KEMAS WARRYATO. THE WARRYATO OF JUNGLE KEMAS.

Brown, yellow grised. *Male*: back with a dirty white patch. *Female* paler. *Young* ashy grey.

*Capra* (*Ibex*) *Warryato, Gray, Mag. N. H.* x. 267, 1843, ♂ and ♀.

*Capra Warryato, Gray, List Mamm. B. M.* 168.



- Kemas hyllocrius*, *Ogilby*, *P. Z. Soc.* 1837, 81 (female only);  
*Waterh. Cat. Mus. Z. S.* 43; *Blyth, Ann. & Mag. N. H.* vii.  
 259, note; *Wagner, Supp.* 503; *Lesson, Nov. Tab. Reg. A.* 182.  
*Capra hyllocria*, *Schinz, Verz.*  
*Hemitragus Warryato*, *Gray, List Osteol. B. M.* 60.  
*Warryato*, *Hardw. MSS.*  
*Hemitragus hyllocrius*, *Sundevall, Pecora*, 101; *Gray, Knowsley*  
*Menag.*  
 Wild Sheep of Tenasserim, *Low, Journ. Roy. Asiat. Soc.* 1836, 50.  
*Hab.* India; Neilgherries.

## OSTEOLOGY.

Head and horns of male and female. Neilgherries. Presented by Richard Partridge, Esq.

Head of female, without the sheath to the horns. Nepal?

## ICON.

*Warryato* or Hill Goat of the Tamooleans, *Hardw. Icon. ined. B. M.* n. 10,975. t. 192 (sketch improved from former by Col. H. Smith, t. 193).

B. *Muffle hairy, ovine.*

*Hircus*, *Brisson, R. A.* i. 38, 1762.

*Capra*, sp., *Pallas; Illiger*, 1811; *Linn. S. N.*; *Desm. N. D. H.* N. 1804.

*Capra*, *Gray, Ann. & Mag. N. H.* 1846, 230.

3. *ÆGOCEROS*.

Nose ovine, hairy, without any muffle. Horns (of male) very large, spirally curved, flat, and with nodose tubercles in front; base very thick, roundish, then conical, attenuated, with sharp and strongly converging tips; of females smaller. Tear-bag and inguinal pores none. Ears densely pilose. Hair of forehead simple. Tail very short, flattened. Chin bearded.

*Ægoceros*, sp., *Pallas, Act. Petrop.* 1779; *Zool. Ross. Asiat.* i. 224.

*Capra*, § a, *Sundevall, Pecora*, 91.

*Capra* (sect. *Turs*), *Gray, Knowsley Menag.*

\* *Horns keeled behind.*

1. *ÆGOCEROS PYRENAICA*. The PYRENEAN TUR.

Face black in front, paler on the sides. Horns keeled behind, flat on the inner side.

?*Capra Ibex*, Linn. S. N. i. 95, part. (see *Sundevall, Pecora*, 115).

*Capra Pyrenaica*, Schinz, Nov. Mem. Soc. Helv. Sci. Nat. ii. t. 1. f. 1, 2, skull; 1836, t. 2, animal and horns; t. 3, skull; t. 4, young; Verz. Syst. ii. 457; *Sundevall, Pecora*, 91; *Brehm, Isis*, 1844, 481; *Wiegmann, Arch.* 1845, ii. 41.

*Hab.* Pyrenees.

Male and female. Pyrenees.

#### OSTEOLOGY.

\*Skull, female. Pyrenees.

*Var.* 1. Legs paler, only black up the centre of the front.

Adult. Spain. Presented by R. Owen, Esq., from Professor Graef's Collection.

\*\* *Horns not keeled behind.*

#### 2. *ÆGOCEROS CAUCASICA*. The TUR or ZACK.

Wool chestnut-brown. Beard of male long. Horns black, wrinkled, moderately thick, semicircular behind and descending externally, the tip turning upwards and inwards; the base almost triangular; middle roundish and compressed. Female with no beard. Horns small, with a slight curve.

*Capra Caucasica*, *Güldenstädt in Pallas, Act. Petrop.* 1779, ii. 273. t. 17 a, female, b, head, male; cop. *Schreb.* v. t. 281 B; *Gmelin, S. N.* i. 197; *Meyer, Zool. Ann.* i. 398; *Desm. Mamm.* 487; *Keyserling et Blasius, Wirbelth. Europas.* 28; *Nordmann, Iter Demidoff*, iii. 58; *Fischer, Syn.* 485, 648; *H. Smith, G. A. K.* v. 871.

*Ægoceros ammon*, *Pallas, Zool. Ross. Asiat.* 229. t. 17, t. 18. f. 6.

*Ægoceros Pallasii*, *Rouillier, Bull. Moscou*, 1841, 110; *Wagner, Supp.* 497; *Schinz, Nov. Mem. Soc. Helv. Sci. Nat.* ii. t. 1, animal; *Verz.* ii. 459; *Ray Soc.* i. 64.

*Ovis Cylindricornis* (Caucasian Argali), *Blyth, P. Z. Soc.* 1840, 68.

?*Ovis ammon* var., *H. Smith, G. A. K.* iv. 317; *Ainsworth, Travels Assyria*, 42.

Caucasian Ibex, *Shaw, Zool.* ii. 367.

*Bouquetin du Caucase*, *Cuv. R. A.* i. 266.

*Hab.* Caucasus.

Male and female. Aladagh. From Mr. Warwick's Collection.

"They live in droves of five or six females and their young, under the care of an old male."

## 4. CAPRA.

Nose ovine, hairy, without any muffle. Horns (of *male*) very large, elongate, recurved, curved nearly on the same plane; base subquadrangular, broad, flattened, and with broad cross ribs in front; outer side rather compressed and rounded; tip compressed, broad; of *female* smaller. Hair of forehead elongate, whorled. Crumen and inguinal pore none. Chin bearded.

*Ibex*, Gray, *Ann. & Mag. N. H.* 1846, 230; *List Osteol. B. M.* 59.

*Capra*, § 1. *Ibex*, Gray, *Knowsley Menag.*

*Ægoceros*, sp., *Pallas, Zool. Ross. Asiat.* i. 228.

*Capra*, sect. β, *Sundevall, Pecora*, 93.

\* *Ears densely villose.*

## 1. CAPRA IBEX. THE IBEX OR STEINBOCK.

Ears small, acute, not one-fourth the length of the head. "Horns of the *male* very strong, thick, subquadrangular, transversely rugose, flattish and nodose in front; of *female* small, compressed, slightly nodose. Fur in summer short, adpressed, without any under coat, ashy grey. In winter, elongate, fulvous brown, with long, dense, intermixed under-fur. Beard short, brown, in summer wanting."—*Schinz*.

*Capra Ibex* (part.), *Linn. S. N.* i. 95; *Gmelin, S. N.* i. 196; *Meyer, Zool. Ann.* i. 397; *Desm. Mam.* 480; *Fischer, Syn.* 483, 647; *H. Smith, G. A. K.* iv. 300. t., v. 868; *Griffith, A. K.* v. t.; *Gray, Cat. Mamm. B. M.* 167; *Schinz, Nov. Mem. Soc. Helv.* ii. t. 2, horns, 1838.

*Capra alpina*, *Girtanner, Journ. Phys.* xxviii. 224.

*Ibex alpinus*, *Gray, List Osteol. B. M.* 59.

*Ibex*, *Plin. Hist. Nat.* viii. 53; *Gesner, Quad.* 351, fig.; *Brisson, R. A.* 64; *Shaw, Mus. Lever.* iii. 105. t. 2; *Zool.* ii. 364. t. 198; *Knight, Mus. Anim. Nat.* f. 667, 668, 669, bad.

*Wild Goat, Penn. Syn.* 13.

*Bouquetin, Buffon, H. N.* xii. t. 13, 14; *Cuvier, R. A.* i. 266; *Mam. Lithog.* t.

*Knorr, Delic.* ii. t. K. 5. f. 2.

*Capricornis, Gesner, Quad.* 1099. fig.

*Hab.* Europe, Alps.

Male. Europe, Alps. Presented by Mrs. A. G. Campbell.

Male. Europe, Alps. Presented by Messrs Murray and Brockedon.

Male. Europe, Alps.

## OSTEOLOGY.

Bouquetin, *Daub. Buff. H. N.* xii. t. 14.

C. Ibex, *Schinz, Nov. Mem. Soc. Helv. N. S.* ii. t. 2, horns.

Base of skull and horns, very large.

Two skulls and horns.

Single horn, rather compressed.

## 2. CAPRA SIBIRICA. The TEK or TAKIGA.

Pale grey. Ears oblong. Beard of both sexes dependent. Lower maxilla of male, and spot on each side of the jaw in the female, black brown.

Ibex Sibiricarum (Der Sibirische Steinbok), *Pallas, Spic. Zool.* xi. 32, 53. t. 3. t. 5. f. 4, horns.

Capra Sibirica, *Meyer, Zool. Ann.* i. 397. 4; *Schinz, Nov. Mem. Soc. Helv.* ii. t. 2, horns, 1838; *Sundevall, Pecora*, 94; *Gray, List Mamm. B. M.* 167.

Capra Ibex, *Schreb. Saugh.* t. 281, from *Pallas*.

Capra Pallasii, *Schinz in Cuvier, Thierr.* iv. 511.

Ægoceros Ibex, *Pallas, Zool. Ross. Asiat.* i. 224.

Capra Ibex β. Sibiricus, *Fischer, Syn.* 485.

*Hab.* Siberia.

Male and female. Siberia. From the St. Petersburg Academy.

## 3. CAPRA HIMALAYANA. The SAKKEEN or SKYN.

Brownish grey. Tail, beard, dorsal stripe, band on shoulders, anterior part of limbs, black or dark brown.

Capra Ibex, *Hodgson, Journ. A. S. Beng.* x. 913, xi. 183.

Capra Sakeen, *Blyth, J. A. S. Beng.* xi. 283, not described.

Capra Ibex Himalayanus, *Hodgson, Calcutta Journ. N. H.* ii. 414, iv. 291.

Himalayan Ibex or Skeen, *Hutton, Calcutta Journ. N. H.* ii. 542; *Kennedy, J. Asiat. Soc. Beng.* v. 242.

Himalaya Ibex, *Blyth, Proc. Zool. Soc.* 1840, 81.

Capra himalayanus, *Schinz, Syn.* 463?

Skyn, Skeen, Saken, Sikeen, or Kyl, *Vigne, Travels*, i. 311.

Skin, *Herbert, Asiat. Res.* xv. 397.

Skyn ♂, Damma ♀, *Moorcroft, Journ. Asiat. Soc. Bengal*, 1839, 928.

Capra (Ægoceros) Skyn, *Wagner; Sundevall, Pecora*, 94.

Capra Ægagrus, *Hutton, Calcutta Journ. N. H.* ii. 521. t. 19.

Ibex (from Simla), *Ogilby in Royle's Himal.* i. 75.

*Hab.* Himalaya; Little Thibet; Mountain districts of Afghanistan, called *Borz* by the Afghans.

Probably not distinct from *Ibex Sibirica*.

"The *Tehr* or Wild Goats of the Himalaya (of Simla and Muscuri) have the anterior edge of the horns decidedly nodose, though less so than the *Jharal*."—*Hodgson, J. A. S. B.* iv. 491, 1835.

"Horns of the *Ibex* are attached to the Zearuts and places of sacred note in Afghanistan."—*Bengal Journ.* 1841, 978.

"The *Ibex* is so abundant in Thibet, as to be killed for their potham or fine wool, which is used to make shawls. They surround them when the mountains are covered with snow. The horns are slit down longitudinally, and formed into bows for archery."—*Lord A. Hay.*

In the Collection from Thibet in the India House Museum there are the skins and skulls of what appear to be two species of *Capra*, but the skulls and skins are not attached together, and the horns of both are very similar. One has short hair and a black beard, and the skull has an elongated face. The other has a black, abundant beard, and very elongated soft fur, like *Capra Sibirica*, and the skull which appears to belong to it has a short face, very broad at the orbits.

#### 4. CAPRA? LÆVICORNIS. The SMOOTH-HORNED IBEX.

Grey brown. Feet, head, large beard, dorsal and posterior ventral line, black. Nose pale. Anal disk small, white. Lateral streak none. Horns very long, curved, smooth; base rounded, three-sided.

*Capra lævicornis*, *Sundevall, Pecora*, 95.

*Hab.* —? Menagerie of the French Museum. Two males.

The horns are intermediate between *C. Ibex* and *C. hircus*; they are probably hybrids. The smoothness of the horns of the specimens in the Paris Museum (1851) appears to arise from the animal having rubbed them against the wall and bars of his paddock.

**\*\* Ears very shortly pilose.**

#### 5. CAPRA NUBIANA. The BEDEN or JÆLA.

Fulvous grey (in winter brown). Dorsal line and sides of tail blackish, beneath white. Feet black and white spotted. Ears three-streaked. *Male* bearded, beard black. Horns very long, subtriangular above, knotted, reclinate on the base. *Female* beardless. Horns slender, smooth, rather compressed, apex slightly inclined.

*Capra Ibex* (Baeden), *Forsk. Faun. Arab.* iv.

*Capra Nubiana* (Boue de la Haute Egypte), *F. Cuvier, Mam. Lithog.* 1825; *Gray, Spic. Zool.* t. 2; *Cat. Mamm. B. M.* 168; *Fischer, Syn.* 483, 648.

*Ibex Nubiana*, Gray, *List Osteol. Spec. B. M.* 60.

*Capra arabica*, Mus. Vindob.

*Capra Jacla*, H. Smith in G. A. K. v. n. 869 (not figure at iv. 301).

*Capra Sinaitica* (Sinaica), Ekrenb. *Sym. Phys.* t. 18; *Gene, Mem. Turino*, xxxvii. t. 2. ♀.

"*Capra Beden*, *Forsk.*," Wagner; *Sundevall, Pecora*, 95.

Cretan Wild Goat, *Belon*, fig.

*Hab.* Egypt; Arabia; Crete.

Young female.—Gray, *Spic. Zool.* t. 6. f. 1. N. Africa. Presented by James Burton, jun., Esq.

Adult male, young male, and younger male. N. Africa.

#### OSTEOLOGY.

Five pairs of horns. Egypt. Presented by James Burton, jun., Esq.

Pair of horns, separate. North Africa.

Pair of horns, half-grown.

Skull and horns. Mount Sinai.

Skull. N. Africa. Presented by Major Macdonald.

*Var.* 1. Legs less black.

*Hab.* Senegal. Mus. Paris.

#### 6. CAPRA VALIE. The WALIE.

Brown, beneath whitish. Feet white. Legs and feet with a black mark in front. Beard moderate. Horns thick, nodose, subrhomboidal at the base. Forehead with a protuberance in front.

*Capra Walie*, Rüppell, *Fauna Abyss.* t. 6.

*Capra Valie*, *Sundevall, Pecora*, 95.

*Hab.* Abyssinia. Male, Mus. Frankfort. Female unknown.

OSTEOLOGY. Rüppell, *Abyss. Fauna*, t. , skull.

#### 5. HIRCUS.

Horns compressed, with a narrow, thin, nodose or torn keel in front; outer side convex, rounded behind. Ears covered with short, adpressed hairs. Hair of forehead like back, rather whorled.

*Hircus*, Wagner, *Supp.*

*Hircus*, sp., Brisson; Rafin. *Anal. Nat.* 56, 1815.

*Capra* ♂., *Sundevall, Pecora*, 96.

*Ægoceros*, sp., Pallas, *Zool. Ross. Asiat.* 224.

*Tragus*, Klein, *Quad.* 15; Schrank, *Fauna Boic.* i. 45.

"Goats are distinguished by the horns being inclined very obliquely, not angular, compressed, and presenting a sharp keeled edge to the front, whereby they may be distinguished at once from all kinds of *Sheep* and *Ibexes*. They have usually a true beard, common to both sexes, not present in the *Sheep*. They have callosities on the knees, and sometimes also on the chest." —*Hodgson*.

# 1. HIRCUS ÆGAGRUS. The GOAT.

*Capra Hircus*, Linn. *Faun. Suec.* 15; *S. N.* i. 94; *Gray, List Mamm. B. M.* 168; *List Osteol. Spec. B. M.* 60; *List Hodgson Coll. B. M.* 28; *Sundevall, Pecora*, 96; *Fischer, Syn.* 484. 648. *Capra caucasica*, H. Smith in *G. A. K.*; *Gray, List Mamm. B. M.* 168.

*Ægoceros Capra*, Pallas, *Zool. Ross. Asiat.*; *Wagner, Supp.*

*Capra Ægagrus*, Gmelin, *S. N.* i. 193; *Meyer, Zool. Ann.* i. 396; *Schreb. Saughth.* t. 282; *Cuvier, Menag. Mus. R. A.* i. 267; *Desm. Mam.* 483; *Fischer, Syn.* 484. 646; *F. Cuvier, Mam. Lithog.* t.; *Sundevall, Pecora*, 97.

*Ægagrus*, Pallas, *Spic. Zool.* xi. 45. t. 5. f. 2, 3.

Ziege, S. G. Gmelin, *Reise*, iii. 493.

*Capra Hircus vulgaris*, *Schreb.* t. 283.

*C. Ægagrus* β. *Hircus*, Gmelin, *S. N.* i. 193; *Desm. Mamm.* 483.

*C. Capricornus*, *Meyer, Zool. Ann.* 39.

*Tragus Ægagrus*, *Schrank, Fauna Boic.* i. 45.

*Capra*, *Plinii H. N.* vi. 50; *Gesner, Quad.* 270. fig.; *Hodgson, J. Asiat. Beng.* xvi. 1847, 1017.

*Hircus*, *Gesner, Quad.* 301. fig.

*Hircus vel Capra domestica*, *Brisson, R. A.* 62.

*Tragus domesticus*, *Klein, Quad.* 15.

*Pasen, Kämpf. Amæn. Exot.* 398. fig. at p. 407. n. 2.

*Capra bezoartica*, Linn. *S. N.* i. 96, part. from *Kämpfer*.

*Gazella bezoartica*, *Brisson, R. A.* 69, part. from *Kämpfer*.

*Goat*, *Penn. Brit. Zool.* 13.

*Domestic Goat*, *Penn. Syn.* 14.

*Common Goat*, *Shaw, Zool.* ii. 369. t. 199.

*Capricorne Goat*, *Penn. Syn.* 16; *Shaw, Zool.* ii. 377.

*Bouc et Chèvre*, *Buffon, H. N.* v. 59. t. 8, 9.

*Capricorne*, *Buffon, H. N.* xii. 146. t. 15, skeleton.

*Hab.* Domesticated.

Stuffed, ears pendent.

Stuffed. (Africa.) Presented by Miss Inglis.

Adult, stuffed. From the Zoological Society's Collection.

Half-grown male. From the Zoological Society's Collection.

Cashmere Goat. India. From Capt. Boys's Collection.

Hybrid Goat, male and female, between Common Goat and European Ibex; bred in the Zoological Society's Gardens.

Young. From Riddle Museum.

#### OSTEOLOGY.

Chèvre, *Daub. Buffon H. N.* v. t. 13.

Capricorne, *Daub. Buff. H. N.* xii. t. 15.

*Capra hircus*, *Schinz, Nov. Mem. Soc. Helv. Sci. Nat.* ii. t. 1, skull.

Bouc de Juda, *Daub. Buff. H. N.* xii. t. 22.

Skull. England.

Skull, with horns. India. From Mr. Argent's Collection.

Horns. India. From Mr. Argent's Collection.

Horns, elongate, erect.

Horns, expanded on the side.

Three skulls, var. Sinal, with the horns regularly bent back.

Nepal. Presented by B. H. Hodgson, Esq.

Skull, with horns, var. Chângra or Shawl Goat. Thibet. Presented by B. H. Hodgson, Esq.

Skull and horns of adult. Presented by B. H. Hodgson, Esq.

Skull, with horns, var. Chappoo, *Capra Chungra*. Thibet. Presented by B. H. Hodgson, Esq.

A young skull of same. Thibet. Presented by B. H. Hodgson, Esq.

A pair of separate horn-sheaths. Thibet. Presented by B. H. Hodgson, Esq.

Two skulls and horns. (The specimens described (*Capra Caucasica*) by Col. H. Smith.)

Single horns, in bad state, with only three very distant knots on front keel. Specimen described as *Capra Caucasica* by Col. H. Smith.

*Capra Caucasica*, *H. Smith, Griffith A. K.* v.; *Gray, List Mamm. B. M.* 167; *Cat. Osteol. Spec. B. M.* 60, not *Guldenst.*

#### DOMESTIC VARIETIES.

1. The Maykay or Maycay, *Buchanan, Mysore*, i. 120. t. 5. f. 10.  
*Hab.* India; Mysore; kept with sheep.

2. The Sircenagur Goat, *Hardw. Icon. ined. B. M.* n. 10,974.  
t. 110, 112, 113.  
*Hab.* India.

3. Jamnapari, *C. Æg. Arietinus, Desm. Mam.*  
Bouc de Nepaul, *F. Cuv. Mam. Lith.* t. ♂ ♀.  
Goat of the country west of the River Jumna, *Hardw. Icon. ined. B. M.* 10,974. t. 111.  
Jamnapari, *Hodgson, Journ. Asiat. Beng.* xvi. 1847, 1024, note.  
*Hab.* India, bred in Nepal.



4. The Bukee, or Goat of the Dukhun, *Sykes, P. Z. S.* 1831.  
*Hab.* Dukhun.
5. Egyptian Goat, *H. Smith, Griffith A. K.* v. 307.  
*Capra* *Æg.* Thebaica, *Desm. Mam.* 848.  
*C. Æg.* Thebaicus, *Fischer, Syn.* 493.  
*C. Indica, Gesner, Jonst. Quad.* t. 26.  
Bouc de la Haute Egypte, *F. Cuv. Mam. Lithog.* t.  
Adimain, *Nieremb. H. N.* 183. fig.  
*C. Æg. Ægyptiacus, Fischer, Syn. Mam.* 649.  
*Hab.* N. Africa.
6. The Doogoo, *Hodgson, J. A. S. B.* x. 913; *Icon. ined.* t. 171. ♂ ♀.  
*Capra hircus* var. Doogoo, *Gray, Cat. Hodgson Coll. B. M.* 27.  
*Capra Dúgú, Hodgson, J. A. S. B.* xvi. 1024.  
*Hab.* Central Hill, Nepal; common, domesticated.
7. The Sinal, *Hodgson.*  
*C. hircus* var. Sinal, *Gray, Cat. Hodgson Coll. B. M.* 28;  
*Hodgson, Icon. ined.* 172; *J. A. S. B.* i. 347, xvi. 1022. t.,  
xx. 913.  
*Hab.* Nepal; Central Mountain region; domesticated, with  
hair and shorn.  
Three skulls, with the horns regularly bent back.  
A skin, with skull and horns.  
Drawing of varieties.—*Hodgson, Icon. ined. B. M.* t. 172.  
“A tall, largish species, with ordinary horns, long, flowing,  
straight hair, drooping, longish ears, and semi-erect short tail.”—  
*Hodgs. l. c. i.* 347.
8. The Cossia Goat. White. Feet pale brown. Horns short,  
recurved.  
*Capra* *Æg.* Cossia, *Buchanan, Hamilton, MSS.* ii. 9, and horn, t.  
*C. Æg.* Cossus, *Blainv. Bull. Soc. Phil.* 1816, 21.  
*C. Aries* Cossus, *Fischer, Syn.* 493.  
*C. tubericornis*, part., *Schinz, Verz.* 467.  
*Hab.* High Mountain districts; called *Cossea* in the East of  
Sylhet.

They are bred by the middling and lower classes of the inhabitants of the highest Cossia mountains. Neither the skin nor hair is applied to any use. The hair is coarse and straight, long and pendulous, and has no wool mixed with it, by which it is easily distinguished from the Shawl Goat. Ears spread, covered, like the legs, with short hair. Tail small and short.

“The female long-haired Goat is said sometimes to produce at a birth one kid like itself, and another short-haired, like the Common Goat of Bengal.”—*Buchanan, Hamilton, MSS.*

## 9. Greater Shawl Goat or Changra.

*Capra Egagrus Changra*, *Buchanan, MSS. Icon. ined.* t. 11;  
*Hodgson, Icon. ined.* t. 173. f. 1, t. 174. f. 1; *Journ. Asiat.*  
*Beng.* xvi. 1017.

*Changra, Ogilby in Royle's Himal.* i. 75.

*Changra or Shawl Goat, Hodgson, J. A. S. B.* i. 347, x. 913,  
 xi. 283.

*Hab.* Nepal and Thibet.

A skull with horns.

An adult skull with horns.

Drawing of male.—*Hodgson, Icon. ined. B. M.* t. 173. f. 1, and  
 t. 174. f. 2.

Drawing of horns.—*Hodgson, Icon. ined. B. M.* t. 175. f. 1, 2.

*Chungra, Paruttes; Cholay, Newars; Camgoo, Thibetians;*  
*Shawl Goat, English.*

"Domesticated in Thibet; wool exported to Cashmere, where it is manufactured into cloth and felts. Many castrated specimens are brought to Nepal for food. Manners exactly like common Goat, and thrive best in a very cold climate."

"Hair of body, neck, and upper part of head remarkably long, especially that arising from the spine, pendulous, straight and rather harsh, and intermixed with remarkably fine and soft short wool, which alone is used by the manufacturer; hair on legs and face rather short, and not mixed with wool. Ears very short. Nose straight. Horns longer than the head, much compressed, inner edge sharpest, approach at the base and diverge at the summit with a twist round; they are nearly straight, and stand on the plane of the forehead. Tail short."

"The drawing from a castrated male (made by Mr. Burton)."  
 —*Buchanan, Hamilton MSS.*

10. Lesser Shawl Goat, *Capra Egagrus Chapu, Buchanan, Icon. ined.* t. ; *Hodgs. Journ. Asiat. Beng.* xvi. 1020. t.

*Capra Hircus Chappoo, Gray, Cat. Hodgson B. M.* 28.

*Chappoo, Hodgson, Journ. A. S. B.* x. 913.

*Bouc de Cachemire, F. Cuvier, Mam. Lith.* t.

*Cashmir Goat, Knight, Mus. Anim. Nat.* f. 664, 665.

White, black varied. Horns suberect, subspiral.

*Hab.* Cashmere; *Buch.* Tibet; *Hodgson.*

Stuffed. India. From Capt. Boys's Collection.

A skull with horns.

A young skull.

A pair of separate horn-sheaths.

Drawing of male.—*Hodgson, Icon. ined. B. M.* t. 173. f. 2, and  
 t. 174. f. 1.

Drawing of horns.—*Hodgson, Icon. ined. B. M.* t. 175. f. 3, 4.

11. Khassia Hill Goat, *Robinson, Assam, 99.*

Hair long, rather coarse, white.

*Hab.* Assam.

## 12. Berbura Goat.

*Capra imberbis* Berbura, *Hamilton, MSS. ii. 10, and Icon. t.*

*C. Æg. imberbis* Barbara, *Blainv. Bull. Soc. Philom.* 1816, 61.

*C. Aries* Barbarus, *Fischer, Syn.* 493.

*C. Jemlaica* var., *H. Smith, G. A. K.*

*Hab.* India; West of the Jumna; called Berbura ♂, Berburi ♀, and Ram Sagul, *Bengalese.*

The horns of the male near the ear at the base, inclining a little back and spread out laterally near the tip, much compressed at the root, convex before, concave behind, and having a spiral turn, not remarkably wrinkled. Ears short. Forehead prominent, covered with longish hair. No beard. Throat of males with a deep dewlap. Fur smooth. Hair harsh, of the spine forming an erect mane, and on fore-part of hind thighs long. *Male*: scrotum divided into two distinct bags. *Female*: want the long hair on spine, thighs, and the dewlap.

They differ from the common Indian Goat by the want of the beard and the length of the legs; and from the *Maycay* of Mysore by the shortness of the ears. They are white, variegated with black and reddish brown. Length from nose to horns 9 in.; from horns to tail 3 ft. 4 in.; height at shoulders 2 ft. 9 in.

"They are said by Mr. Fleming to have been introduced from Abyssinia by an ambassador from that country."—*Hamilton, l. c.*

## 13. Naga Goat.

"Body marked with beautiful streaks."—*Robinson, Assam, 99.*

*Hab.* Assam.

14. Whidaw Goat, *Penn. Syn. 16.*

*Capra reversa*, *Linn. S. N. 95.*

*C. Æg. reversa*, *Gmelin, Desm.*

*C. H. reversus*, *Schreb. S. t. 206 a; Buffon, H. N. xii. 154.*

Bouc de Juda, *Buffon, H. N. xii. t. 20, 21, 22; Suppl. iii. t. 13.*

*Hab.* Whidaw.

15. African Goat, *Penn. Syn. 16.*

*Capra depressa*, *Linn.*

*C. H. depressa*, *Schreb. t. 287.*

Bouc d'Afrique, *Buffon, H. N. xii. 154. t. 18.*

Chèvre nain, *Buffon, H. N. xii. 154. t. 19; F. Cuv. Mam. Lith. t.*

*Hab.* Africa.

16. Common Goat, *Shaw.*

*Capra hircus*, *Linn.*

Capricorne, *Buffon, H. N. xii. 146. t. 15, skeleton.*

- Capra capricornus*, *Meyer*, *Ann.* 39.  
*C. Egagrus capricornus*, *Gmelin*, *S. N. i.* ; *Erz.* 364.  
*C. Hircus capricornus*, *Fischer*, *Syn.* 486.  
 Capricorne Goat, *Penn.*  
 Goat, *Low*, *Dom. Anim. B. I. ii.* 73.  
 Bouc et Chèvre, *Buffon*, *H. N. v. t.* 8, 9.  
*Hab.* Europe.
17. Thibet Goat, *C. H. Thibetanus*, *Desm.* 484.  
 Chèvre de Thibet, *F. Cuv. Mam. Lith.*  
 Bouc de Cachemere, *F. Cuv. Mam. Lith. t.*  
*Hab.* Thibet.
18. Angora Goat, *Penn. Syn.* 15; *Shaw*, *Zool. ii.* 275. t. 200.  
*C. Angorensis*, *Linn.*  
*C. Hircus Angorensis*, *Erzleb.*; *Schreb. Saugth. t.* 284 A, B.  
*C. Eg. Angorensis*, *Gmelin*, *Desm.*  
*C. Angolensis*, *Hasselq. N. Palæst.* 285.  
 Chèvre d'Angora, *Tour. Voy. ii.* 185. fig.; *Buffon*, *H. N. v.*  
 71. t. 10, 11; *F. Cuv. Mam. Lith. t.*  
*Hab.* Angora.
19. Syrian Goat, *Penn. Syn.* 15. t. 5. f. 1, 2.  
*Capra Mambrica*, *Linn.*  
*C. Hircus Mambrica*, *Schreb. t.* 285; *Desm.*  
*C. Mambrine* ou de Levant, *Buffon*, *H. N. xii.* 152. t. 10.  
*C. auribus demissis*, *Aldrov. Bisulc.* 769. fig.  
*C. Syriaca*, *Brisson.*  
 Long-eared Syrian Goats, *Knight, Mus. Anim. Nat. f.* 661,  
 662, 663.  
*Hab.* Syria.
20. Persian Goat, *H. Smith, Griffith A. K. v.* 306.  
*C. Eg. Persicus*, *Fischer, Syn. Mam.* 648.  
*Hab.* Persia.
21. Indian Goat, *H. Smith, G. A. K. v.* 307.  
*C. Eg. Indicus*, *Fischer, Syn. Mam.* 649.  
 Indian Goats (various), *Capra Egagrus var., Hardw. Icon.*  
*ined. B. M. n.* 10,974. t. 114, 115. t. 189, 190, 191.  
*Hab.* India.
22. Spanish or Hornless Goat, *C. Hircus ecoris*, *Schreb. Saugth.*  
 i. t. 287 B.  
*C. E. acera*, *Desm.*  
 Chèvre sans cornes, *F. Cuvier, Mam. Lith.*  
*Hab.* Spain.
23. Caschmere Goat, *C. Eg. lanigera*, *Desm. Mam.*

Chèvre de Cachemere, *F. Cuv. Mam. Lith. t. ; Desmoul. Dict. Class. H. N. iii. 578.*

*Hab. Thibet.*

24. Jamaica Goat, *C. Hircus Jamaicensis, Fischer, Syn. 486.*

*Hab. Jamaica.*

25. South American Goat, *Capra Ægagrus, Renger, 366.*

*Hab. S. America.*

Dr. Gardiner observes, "Goats in Brazil lose the long hair natural to them in cold countries, which proves how much the oeconomy of animals can suit itself to change of circumstances." —*Travels*, 163.

*Var. 1.* Horns very large, more or less twisted, varying from the curvature of those of the *Koodoo (A. Strepsiceros)*, only in an opposite direction, to the straight with spiral keel of the *Impoofo (Antilope Oreas)*. Size large. Brown, like Domestic Goat. *Aigoceros Falconeri, Wagner, Murch. Gel. Anzeig. 1839, ix. 430; Wiegman. Arch. 1841, 54.*

*Capra Falconeri, Hugel; Wagner in Hugel Kaschmir, iv. 579. tab. , 1844; in Wiegmann, Arch. 1845, ii. 7.*

*Markhur, Vigne, Ghuzni, Kabul, Afghanistan, 1840, p. 86; Travels in Kashmir, 279; Lord in Burns' Cabool (1842), p. 386.*

*Wild Goat, Blyth, Proc. Zool. Soc. viii. 88.*

*Capra magoceros, Hutton, Calcutta Journ. N. H. ii. 521. t. 20.*

*Markbur, Blyth, Ann. N. H. vii. 196, note.*

*Capra Ægagrus, var., Blyth, P. Z. S. 1840, 80.*

*Markhor, Ray Soc. i. 65.*

*Capra hircus γ. asiatica, Sundevall, Pecora, 97.*

*Hab. India; Mountains of Cashmere; Dr. Falconer. Called Markhore or Snake-Eater by the Afghans, and "Marbul at Cabul," Blyth. Rewachi of Little Thibet.*

Mr. Blyth justly observes, that the horns of all domestic Goats have a tendency to assume the spiral form, especially at the tip, and he has never observed this in the wild kinds. He further remarks, that he has never seen two specimens of the *Markbur* with the horns alike.

Mr. Blyth says, "I consider the *Markbur* to be a feral race of domestic Goats of remarkable large size, but otherwise not essentially different from the *Shawl Goats* of the same countries." —*Ann. N. H. vii. 196, note.*

#### OSTEOLOGY.

Skull, with horns. India. Presented by the E. I. Company.

Single horn. India. Presented by H. Falconer, M.D.

*Doubtful species.*1. *Capra?*

*Antelope torticornis*, *Herm. Obs. Zool.* i. 87.

*A. (Tragelaphus) torticornis*, *Fischer, Syn.* 473.

2. *Antelope? grandicornis*, *Herm. Obs. Zool.* 87; *Fischer, Syn.* 466. 633.

*A. Egcercus grandicornis*, *H. Smith, G. A. K.* v. 812.

Subtribe V. *Oveæ*. Forehead flat or concave. The horns are more or less spiral, wider than deep at the base, and slightly annulated in front. The females are often hornless. The skull has a more or less deep rounded suborbital pit, without any fissure; the masseteric ridge ascending high before the orbit; the auditory bulla small; the basioccipital flat, more or less expanded anteriorly by the extension of the anterior pair of tubercles, the posterior ones small; the cutting-teeth are nearly equal-sized and shelving; and there are no supplemental lobes to the grinders. The hoofs are triangular, and being shallow behind, they have distinct interdigital fossæ. Males emitting no stench.

*Ovis*, *Linn. S. N.*; *Desm.* 1804.

*Aries*, *Brisson, R. Anim.* i. 48, 1762.

*Capra*, sp., *Illiger*, 107, 1811.

*Ovis*, *Ravi Syn. Quad.* 73; *Gray, Ann. & Mag. N. H.* 1846, 230.

*Ovis*, part., *Wagler, N. Syst. Amph.* 32, 1830.

*Oveæ*; *Gray, Ann. & Mag. N. H.* 1846, 230.

*Ovidæ*, *J. Brookes, Mus. Cat.* 72, 1828.

*Capridæ*, part., *Ogilby, P. Z. S.* 1836, 137.

*Ovesidæ*, part., *Lesson, Nov. Tab. R. A.* 182.

*Sheep*, *Penn. Hist. Quad.* i. 32.

*Ovis* v. *Ammon, Blainv. Bull. Soc. Phil.* 1816, 76.

*Aries*, *Rafinesque, Anal. Nat.* 56, 1815.

In fighting they run a-tilt, adding hither the force of impulse to that of weight; incurious and timid; rarely bark trees.

Pallas, and more lately Géné, Hodgson, Blasius, and Blyth, have pointed out the characters that define the limits of this genus, which Desmarest, Fischer, and several other authors are inclined to place with the Goat.

The females are sometimes hornless. Gmelin noticed this with respect to *O. Ammon*, Blyth. *O. Nahor* and the female Corsican *O. Musimon* are generally hornless.

Blasius has remarked that the right horn of *O. Argali*, *O. montana*, *O. Nahor*, *O. Aries*, *O. Musimon* and *O. Vignei*, winds to the left, but in the two latter species only slightly, while in *O. Tragelaphus*, *O. orientalis*, *O. Burhel* and *O. Cyprius*, the right horn winds to the right.

## SYNOPSIS OF GENERA OF OVEÆ.

1. OVIS. Crumen distinct. Tail elongated. Skin covered with wool or adpressed hair.
2. CAPROVIS. Crumen distinct. Tail very short. Skin covered with thick hair, covering the wool.
3. PSEUDOIS. Crumen none. Tail rather elongated. Forehead convex. Skin covered with thick hair.
4. AMMOTRAGUS. Crumen none. Tail rather elongated. Forehead concave. Skin covered with short hair, and elongated tuft of hair.

a. *Crumen distinct. Infraorbital pit distinct.*

## 1. OVIS.

Forehead convex. Horns more or less spiral, bent inwards at the tips, varying greatly in size and form. Crumen distinct. Tail more or less elongated. Body covered with wool or close-pressed hair. Skull with a more or less deep suborbital pit, but no fissure.

Ovis, sp., *Linn.*

Capra, sp., *Blumenb.; Fischer.*

Musmon, *Schrank, Fauna Boica.*

Aries, *Rafin. Anal. Nat.* 56, 1815.

## 1. OVIS (ARIES) ARIES. The SHEEP.

*Ægoceros Aries, Pallas; Wagner.*

Ovis Aries, *Linn. S. N.* i. 97; *Gmelin, S. N.* i. 197; *Erxl.* 242; *Desm. Mam.* 488; *Gray, List Mamm. B. M.* 169; *List Osteol. B. M.* 61; *List Hodgson Mam. & Birds B. M.*; *Sundevall, Pecora*, 89.

Ovis domestica, *Brisson, Règ. Anim.* 74.

Capra Ovis, *Blumenb. Naturg.* x. 116.

Capra Aries, *Fischer, Syn.* 489. 649.

Musmon Aries, *Schrank, Faun. Boic.* i. 46.

Pecus, Aries, Ovis, *Plin. H. N.* viii. 47, 48.

Ovis Aries, &c., *Gesner, Quad.* 872. f. 873, 925, 926; *Jonst. Quad.* 54. t. 22; *Linn. Amæn. Acad.* iv. 169.

Sheep, *Penn. B. Z.* 10; *Youatt, Sheep, their breeds, &c.*; *Low, Dom. Anim. Brit. Islands.*

Ram, *Penn. Syn.* 10.

Belier et Brebis, *Buffon, H. N.* v. l. t. 1, 2; *Schäf. Meyer Thiere*, i. t. 51; *Walther, Wetterau Ann.* i. 283.

*Hab.* Domesticated.

Female Turkish Sheep, brown and white varied ; tail slender ; with two throat-beards.

*O. Aries Africanus*, Linn.

*O. Aries longicaudatus*, Brisson ?

Male, many-horned, white and black varied.

*O. Aries polyceratus*, Linn. ; *Buffon*, *H. N.* xi. 354. t. 31, 32 ; *Penn. B. Quad.* t. 3. f. 2, 3.

Young.

#### OSTEOLOGY.

Mouton, *Cuvier*, *Oss. Foss.* iv. t. 1. f. 1-4, skull.

Brebis, *Daub. H. N.* v. 1.

Horns of many-horned variety.

Horns of many-horned variety.

Horns, small.

Skull and horns of spiral-horned variety.

Skull and horns of spiral-horned variety.

Horns of spiral-horned variety.

Horns of spiral-horned variety.

Skull, with the horns united together at the base.

*Var.* Huniah Sheep.

Skull of adult male, with horns. Nepal. Presented by B. H. Hodgson, Esq.

Skull of young, without the cases of the horns. Nepal. Presented by B. H. Hodgson, Esq.

Skull of young, without the cases of the horns. Nepal. Presented by B. H. Hodgson, Esq.

Two skulls of many-horned variety, horns of each side arising from the same base, showing that they are produced by the division of the core. Nepal. Presented by B. H. Hodgson, Esq.

Two skulls of four-horned varieties, with horns separate from one another at the base (each wanting one sheath). Nepal. Presented by B. H. Hodgson, Esq.

*Var.* Dumba. Skull of a "Cabul Dumba Sheep." Presented by B. H. Hodgson, Esq.

*Var.* Cago. Skull of adult (without the sheath of the horns), imperfect. Presented by B. H. Hodgson, Esq.

Skull of the young, hornless.

*Var.* Horns united at the base. Skull, with the horns cut off near the base. Presented by B. H. Hodgson, Esq.

Skull. England.

Skull. From Mr. Argent's Collection.

Skull. Fat-tailed variety. From Mr. Argent's Collection.

Horns, separate.

Skull and horns.



Skull and horns.

Skull and horns. From Mr. Argent's Collection.

The Domestic Sheep offer many varieties in the form and even the number of the horns, and especially in the texture of their fur. Many in cold and temperate climates, which are covered with wool, when they are moved to a warmer climate become permanently covered with short hair.

Dr. Gardiner in his journey from Pernambuco to Crato passed through a flock of several hundred sheep. "The excessive heat of the climate had wrought a remarkable change in their appearance, their skin being wholly destitute of wool, and replaced by a short hair not unlike that of a cow."—*Trav.* 163.

But some kinds even in England, which are covered with wool in the winter, are covered with short adressed hair in the summer. This is the case with the West India Sheep, noticed by Mr. Blyth (*Ann. Nat. Hist.* vii. 255). They also present several varieties in the form of the tail.

Pallas divides the Russian Sheep into four varieties, according to the shape of the tail, thus:—

- a. *O. dolichura occidentalis*, Pallas, *Spic. Zool.* xi. 60; *Zool. Ross. Asiat.* 233.
- b. *O. platyura media*, Pallas, *S. Z.* xi. 78; *Itin. poster.* ii.; *Zool. Ross. Asiat.* 233.
- c. *O. Steatopyga orientalis*, Pallas, *S. Z.* xi. 63. 80. t. 4; *Nov. Comm. Petrop.* v. 31. 343. t. 8; *Zool. Ross. Asiat.* 233.
- d. *O. brachyura borealis*, Pallas, *Spic. Zool.* xi. 61; *Zool. Ross. Asiat.* 233.

#### DOMESTIC VARIETIES.

1. Spanish Sheep, *Shaw, Zool.*  
*Ovis Hispanicus*, *Linn. Amæn. Acad.* iv. 174.  
 Merino, *Desm. N. Dict. H. N.* t. 918. f. 1, 2.  
 Merino Sheep, *Knight, Mus. Anim. Nat.* f. 682.  
 British Middle-wooled Sheep, *Knight, Mus. An. Nat.* f. 684.  
 Merino Ram and Ewe, *Low, Dom. Anim. Brit. Islands*, ii. t. 12.
2. Common Sheep, *Penn. Syn.; Hist. Quad.* i. 33.  
*Ovis rusticus*, *Linn. Amæn. Acad.* iv. 174.  
*O. Gallica*, *Desm.*  
*O. brachyura*, Pallas, *Spic. Zool.*  
*O. leptura*, *Schreb. Saugth.* t. 290 A. B.
- a. Hornless Sheep, *O. Anglicana*, *Linn. Amæn. Acad.* iv. 174.  
*Ovis A. Anglicus*, *Eræleb.*  
 Lincolnshire Sheep.

- b. Muggs Sheep and Shetland Sheep, *Fleming, Brit. Anim.* 25.  
Shetland Sheep, *Bewick, Hist. Quad.* 68.  
Soft-wooled Highland Sheep, *Low, Dom. Anim. B. Islands.*
- c. Ryeland Ram and Ewe, *Low, Dom. Anim. B. I. ii. t.* 13.
- d. Southdown Ram, Ewe and Lamb, *Low, Dom. Anim. B. I. ii. t.* 14, 15.
- e. Old Lincoln Ram, *Low, Dom. Anim. B. I. ii. t.* 16.
- f. Romney Marsh Ewe and Lamb, *Low, Dom. Anim. B. I. ii. t.* 17.
- g. Cobwold Ewe and Lamb, *Low, Dom. Anim. B. I. ii. t.* 18.
- h. New Leicester Ram and Wether, *Low, Dom. Anim. B. I. ii. t.* 19.  
Leicester Ewe and Lambs, *Stephens, Book of the Farm*, 1278.  
fig. & t. 33.  
Improved Leicestershire Sheep, *Bewick, Hist. Quad.* 63.
- i. Cheviot Ram, *Bewick, Hist. Quad.* 58. fig.
- k. Old Teeswater Ram, *Bewick, Hist. Quad.* 60. fig.
- l. Improved Teeswater Ram, *Bewick, Hist. Quad.* 61. fig.
- m. Mr. Culley's Wedder, *Bewick, Hist. Quad.* 66. fig.
- n. The Dunky or Dwarf Ram, *Bewick, Hist. Quad.* 70. fig.
- o. Zetland and Orkney Ram and Ewe, *Low, Dom. Anim. B. I. ii. t.* 1.
- p. Higher Welsh Mountain Ewes, *Low, Dom. Anim. B. I. ii. t.* 2.
- q. Soft-wooled Sheep of Wales (Ewes), *Low, Dom. Anim. B. I. ii. t.* 3.
- r. Wicklow Mountain Sheep (Ram and Ewe), *Low, Dom. Anim. B. I. ii. t.* 4.
- s. The Kerry Sheep (Wethers), *Low, Dom. Anim. B. I. ii. t.* 5.
- t. Exmoor Ram and Ewe, *Low, Dom. Anim. B. I. ii. t.* 6.
- u. Black-faced Sheep, *Fleming, Brit. Anim.* 25.  
*Ovis collaris*, *Walker, Essays*, 522.  
Black-faced Heath Sheep (Ewe and Lamb), *Low, Dom. Anim. B. I. ii. t.* 7. Ram, t. 3, *Supp.*  
Black-faced or Heath Ram, *Bewick, Hist. Quad.* 56. fig.  
Improved Heath Ram, *Bewick, Hist. Quad.* 57. fig.  
Black-faced Ram and Ewe, *Stephens, Book of the Farm*, 1281.
- v. Cheviot Ewe, *Low, Dom. Anim. B. I. ii. t.* 8.  
Cheviot-tup, *Stephens, Book of the Farm*, 1279.
- w. Old Norfolk Ewe, *Low, Dom. Anim. B. I. ii. t.* 9.

- x. Old Wiltshire Ram and Ewe, *Low, Dom. Anim. B. I. ii. t. 10.*  
 y. Dorset Ram and Ewe, *Low, Dom. Anim. B. I. ii. t. 11.*  
 z. The Rass or Roosh, *Ovis Polii*, *Blyth, P. Z. S. 1840, 62; Ann. & Mag. N. H. vii. 195. t. 5. f. 1, 2, horns; Gray, List Osteol. B. M. 61.*  
*Ovis Sculptorum, Blyth, P. Z. S. 1840, 63; Ann. & Mag. N. H. vii. 196. t. 5. f. 3, 4.*  
 Wild Sheep, *Marco Polo, Travels, 142.*  
*Rasse, Burnes, Travels Bokhara, ii. 208.*  
*Hab. India; Plains of Pamer, east of Bokhara, 16,000 feet above the sea level.—Blyth.*

#### OSTEOLOGY.

Horns, separate. Bokhara. Presented by the East India Company.

The skull named *Ovis Polii* in the Museum of the India Company, Leadenhall Street, which was sent from the Asiatic Society of Bengal, agrees with Blyth's figure, and is probably one of the heads he describes as being in that Collection; the facial line is very convex.

The India Company received from Capt. Strachan (Dec. 1850) the skin, with head and horns, which exactly resembles the pair of horns and skull from the Bengal Society, and with Blyth's figures; but it is evidently a variety of the Domestic Sheep covered with wool.

The animal does not agree with the *Katchgar* or Wild Sheep of *Wood's Sources of the Oxus*, 368, quoted by Mr. Blyth in the *Journal of the Asiatic Society of Bengal*.

3. Barwall Sheep, *Ovis (Aries) Bârwâl, Hodgson, J. Asiat. Soc. Beng. x. 913.*  
*Ovis Barual, Hodgson, J. A. S. B. xvi. 1010. t. , & t. . f. 3, head.*  
*Kachar or Barwal Sheep, Hodgson, J. A. S. B. i. 347.*  
*O. Ammonoides var. 1, Gray, Cat. Hodgson Coll. B. M. 29.*  
*Barwall, Ogilby in Royle's Himal. i. 75.*  
*Hab. Nepal.*

Skin, with head and horns, imperfect. Nepal. Presented by J. B. Hodgson, Esq.

#### OSTEOLOGY.

Skull, with horns, half-grown, imperfect. Nepal.

Two pair of horns of different ages. Nepal.

#### ICON.

Drawing of adult.—*Hodgson, MSS. ined. B. M. t. 179, t. 181. f. 2.*

4. Huniah Sheep, *Ovis hunia*, *Hodgs. J. A. S. B.* i. 348, xvi. 1847, 1005-1; *P. Z. S.* 1834, 99.

The Hoonia or Black-faced Sheep of Tibet, *Hodgs. J. A. S. B.* xi. 284. t. , young male.

Hoanah Sheep, *Ogilby in Royle's Himal.* i. 75.

*Hab.* Nepal, Northern hilly region.

"Large tall breed, with slender, compressed, spirally twisted horns, and short narrow tails; wool white, superb; individuals have often three, four, and even five horns."—*Hodgson*.

#### OSTEOLOGY.

A skull of adult male, with horns.

Two skulls of young, without the cases of the horns.

Two skulls of many-horned variety, horns of each side arising from the same base, showing they are produced by the division of the core.

Two skulls of four-horned varieties, with horns separate from one another at the base (each wanting one sheath).

#### ICON.

Drawing of Hoonia Sheep, two varieties.—*Hodgson, Icon. ined. B. M.* t. 180, one copied t. 181. f. 1.

"Barwall and Hoanah Sheep are used as beasts of burden for carrying grain and other produce across the mountains."—*Ogilby, l. c.* 74.

5. Cago, *Hodgs. J. A. S. B.* x. 913.

*Ovis Cagia*, *Hodgs. J. A. S. B.* xvi. 1013.

The Kago, or Tame Sheep of Cabul region, *Hodgs. J. A. S. B.* i. 348.

Cago Sheep, *Gray, List Hodgson Mam. & Birds B. M.*

*Hab.* Nepal, Central hilly region.

#### OSTEOLOGY.

A skull of adult (without the sheath of the horns), imperfect.

A skull of the young, hornless.

#### ICON.

Drawing of male Cago or Cagia Bhira, female and young.—*Hodgson, Icon. ined. B. M.* t. 182.

6. Seling *Ovis* § *Silingia*, *Hodgs. J. A. S. B.* x. 913, xvi. 1008. t. , & t. . f. 4.

*Hab.* Nepal, Central hilly region; Tibet, eastern.

A specimen with head and horns.

#### ICON.

Drawing of Silingia Sheep, male and female.—*Hodgson, Icon. ined. B. M.* t. 183.

7. Curumbar (Sheep), *Buchanan, Mysore*, ii. 277. t. 17 ♂ ♀. f. 42, 43.

Wool thick, curly, with little or no hair. Ears small.

*Hab.* India; Mysore.

8. The Sheep called Gārār, *Buchanan Hamilton?*, *Icon. ined. Mus. Ind. Company*, t. ♂ ♀.

Black. Wool short. Tail very long, slender. Horns short, close-pressed on side of head. Face arched. Ears large, dependent.

*Hab.* India.

9. The Dukhun Sheep, *Sykes, P. Z. S.* 1831.

Legs short. Body throughout short, chaffron arched. Wool short, crisp and coarse, nine-tenths black, with a white streak from angle of the eyes to the mouth, and a white patch on crown. They are extensively bred; as many as 20,000 or 30,000 Sheep and Goats may be seen together in the uncultivated tracts of the Dukhun.

*Hab.* Dukhun.

10. West-Indian Sheep, *Blyth, Ann. N. H.* vii. 255, *note*.

*Hab.* West Indies. *Mus. Zool. Soc.*

11. Brazilian Sheep, *Gardiner, Travels Brazils*, 163.

*Hab.* Brazils.

12. Demerara Sheep. Brown. Horned. Ears small, erect, covered with long, harsh hair, much longer on the sides; of face short, adpressed. Tail elongate, slender. In summer, hair short and adpressed.

*Hab.* W. Africa.

A male. From the Gardens of the Zoological Society.

13. South American Sheep, *Ovis Aries*, *Renger*, 366.

14. Smooth-haired Sheep, *Ovis Africanus*, *Raii Syn.* 75; *Linn. Amæn. Acad.* vj. 173.

*O. Æthiopica*, *Charlet. Exerc.* 9.

*O. Africana a*, *Sloane, Jam.* ii. 328.

*Hab.* Africa.

15. African Sheep, *Penn. Syn.* 12.

*Ovis Guineensis*, *Raii Syn.* 75; *Linn. S. N.* 98; *I. Geoff. Dict. Class. H. N.* xi. 268.

*A. longipes*, *Desm. Mam.* 489.

*A. Guineensis seu Angolensis*, *Marg. Bras.* 234. fig.

*Caper Mambrinus*, *Charlet. Exerc.* 10.

*Adimmayn*, *Marmol. Afric.* i. 39.

*Mouton*, *Adans. Seneg.* 37.

Mouton à longue jambes, *F. Cuv. Mam. Lith. t.*

Belier du Senegal, *Buffon, H. N. xi. 359.*

Sheep of Sahara, *Shaw, Travels, 241.*

*Hab. Africa.*

16. Guinea Sheep, *Knight, Mus. Anim. Nat. f. 676.*

Belier et Brebis des Indes, *Buffon, H. N. xi. t. 35, 36; cop.*

O. A. Guineensis, *Schreb. Saugh. t. 294 a, b, c.*

*Hab. Guinea.*

17. Morvant de la Chine, *Buffon, Supp. iii. t. 10.*

*Hab. China?*

18. Shaymbliar (Sheep), *Buchanan, Mysore, ii. 277. t. 18. f. 44, 45 ♂ ♀.*

Wool very scanty, principally covered with reddish brown or black hair.

*Hab. India; Mysore.*

19. Sheep of Zeyla, *Buckingham, Trav. Arab Tribes, 93.*

White. Head and neck black or brown, covered with hair.

Tail slender at the tip, short, broad, and fat at the base.

*Hab. Zeyla; entrance of Red Sea. Domestic at Mokha; Buckingham.*

20. Fezzan Sheep, *Bennett, List Anim. Gard. Zool. Soc. 1830, 12. 474.*

*Hab. Tripoli. Presented by Hanmer Warrington, Esq.*

21. St. Helena Sheep. Covered with short smooth hair. White, black spotted. Tail subcylindrical.

*Hab. St. Helena.*

A lamb born in Enfield, from one of Mr. Warren's flocks at Enfield. Purchased of Mr. Argent, 1850. A true Sheep, very like a Goat, with a cylindrical tail.

22. Marocco Sheep, *Ovis Ar. Numidæ, H. Smith, Griff. A. K. iv. 326.*

*Hab. Marocco.*

23. Congo Sheep, *Ovis Aries Congensis, H. Smith, Griff. A. K. iv. 326.*

*Hab. Congo.*

24. Angola Sheep, *Ovis Aries Angolensis, H. Smith, Griff. A. K. iv. 326.*

*Hab. Angola.*

25. Zenu or Goitred Sheep, *Ovis Aries Steatinion, H. Smith, Griff. A. K. iv. 327. t. 196.*

*Hab. Angola.*

26. The *Ixalus*, *Ixalus probaton*, *Ogilby*, *Proc. Zool. Soc.* 1836, 119, 135,  
*Ovis* —, sp., *Blyth*, *P. Z. S.* 1840, 12; 1843, 73; *Ann. & Mag. N. H.* vii. 255.  
*Ovis ixalon*, *Sundevall*, *Pecora*, 90.  
*Ovis Aries* var., *Gray*, *Knowsley Menag.* 40.  
*Hab.* —. *Mus. Zool. Soc.*  
 Mr. Ogilby made a genus of this skin, but it appears to be only a short-haired Sheep with rudimentary horns.
27. Cretan Sheep, *Penn. Syn.* 11. t. 3. f. 1; *Hist. Quad.* 33; *Shaw*, *Zool.* ii. t. 203.  
*Ovis Strepsiceros*, *Rasi Syn.* 75; *Linn. Syst. Nat.* i. 98; *Belon. Obs.* 20. fig.  
*O. A. Strepsiceros*, *Schreb. Saugth.* t. 291 a. b.  
*O. Cretensis*, *Jonst. Quad.* t. 45.  
*Capra Cretensis*, *Brisson*.  
*Strepsiceros Cretica*, *Besch. Naturf. Freund.* iv. 624. t. 20.  
*Cretensis Aries*, *Aldrov. Bisulc.* 406. fig.  
*Strepsiceros*, *Buffon*, *H. N.* xi. 358.  
*Belier et Brebis de Valachie*, *Buffon*, *H. N. Supp.* iii. t. 7, 8.  
*Zackl. Austrians.*  
*Wallachian Sheep*, *Bewick*, *Hist. Quad.* 73. fig.  
*Chèvre de Crète*, *Buffon*, *H. N.*  
*Hab.* Island of Crete.
28. Long-tailed Sheep, *Ovis longicaudatus*, *Brisson*, *R. A.* 76.  
*O. dolichura seu tscherkessica*, *Pallas*, *Spic.* xi. 60.  
*Ovis dolichura occidentalis*, *Pallas*, *Zool. Ross. Asiat.* i. 233.  
*O. Arabica*, *Jonston*, *Quad.* t. 23.  
*Arabiae Oves*, *Aldrov. Bisulc.* 404.  
*Arabisch Schaf*, *Gesn. Thierb.* 326. fig.  
*Mouton à long queue*, *Munk. Palestine*, t. 3.  
*Hab.* Russia.
29. Broad-tailed Sheep, *Shaw*, *Travels*, 241; *Penn. Syn.* 4. t. 1.  
*Ovis laticaudatus*, *Erzl.*, *Geoff. Mem. Egypt.* t.; *Lesson*, *Comp. Buffon*, x. 312.  
*O. laticauda platyceros s. arabica*, *Linn. Amœn. Acad.* iv. 173;  
*J. G. Gmelin*, *Nov. Com. Petrop.* v. 343. t. 8.  
*O. Turcica*, *Charlet. Exerc.* 9.  
*O. cauda obesa*, *Ludolf. Æth.* 146. fig.  
*Arabiae Oves*, *Aldrov. Bisulc.* 404. fig.  
*Mouton de Barbarie*, *Buffon*, *H. N.* xi. 355. t. 33.  
*Sheep*, *Russel*, *Aleppo*, 51.  
*Belier de Tunis*, *Ency. Méth.* t. 47. f. 2.  
*Hab.* Barbary.

- a. Fat-rumped Sheep, *Penn. Quad.*; *Shaw*.  
*O. Steatopyga*, *Pallas*, *Spic.* 55. t. 4. f. 1, 2; *Schreb. Saugth.* t. 292.  
*Ovis steatopyga orientalis*, *Pallas*, *Nov. Comm. Petrop.* v. 31. 343. t. 8; *Zool. Ross. Asiat.* i. 233.  
*O. Aries Kurgiesia*, *Gene*, l. c.  
 Tartarian Sheep, *Bewick, Hist. Quad.* 71. fig.
- b. Persian Sheep, *Knight, Mus. Anim. Nat.* f. 677.  
*Ovis A. ecaudatus*, *I. Geoff. Dict. Class. H. N.* xi. 268.  
*O. Aries recurvicauda*, *Gene, Mem. Acad. Torino*, xxxvii. 286. t. 1 & 2.
- c. Fat-tailed Sheep, *Knight, Mus. Anim. Nat.* f. 678, 679.  
*O. A. macrocerus*, *Schreb. Saugth.* t. 295; *Gene, Mem. Acad. Torino*, xxxvii. 285.  
 Mouton à grosse queue, *F. Cuvier, Mam. Lith.* t.
- d. The Aora fiyel, or Abyssinian Sheep.  
*Ovis steatopygus*, *Des Mur. et Flor. Prevost, Voy. en Abyssinie*, vi. 36. t. 6. 1851.  
*Hab.* Abyssinia.
- e. Bucharian Sheep, *Ovis Bucharica*, *Pallas, Spic.* xi. 78.  
 Mouton d'Astrachan, *Desm.*  
*Ovis Aries Astrachanica*, *Gene, Mem. Acad. Torino*, xxxvii.  
*Ovis platyura media*, *Pallas, Zool. Ross. Asiat.* i. 233.  
*Hab.* Bucharia, Caucasus, and Persia.  
 The skin of the unborn lambs with grey curled hair is much prized as a fur.
- f. Thibetan Sheep, *O. Thibetanus*, *Fischer, Syn.* 491.  
 Cachemerisches und Thibetanisches Schaf, *Walth.*  
*Tus Aessel, Thibetian.*  
*Hab.* Thibet.
- g. Cape Sheep, *Penn. Syn.* t. 4. f. 2.  
*Ovis Capensis*, *Erzleb.* 250; *Thunb. Mem. Acad. Petersb.* iii. 318.  
*Hab.* Cape.
- h. *Ovis Aries appendiculata*, *Gene, Mem. Acad. Torino*, xxxvii. 285.
- i. Sheep of Belkah, *Buckingham, Trav. Arab. Tribes*, 93.  
 Body white. Head and neck black or brown. Covered with thick wool. Tail short, fat, broad, with a thin excrescence at the end like a pig-tail, about an inch long.  
*Hab.* Palestine; Plains of Belkah.



30. Many-horned Sheep, *Penn. Syn. t. 3. f. 2, 3*; *Bewick, Hist. Quad. 72. fig.*  
*Ovis polyceratus*, *Linn. Amæn. Acad. iv. 174*; *Schreb. Saugth. t. 289.*  
*O. sexcornis* et *O. tricornis*, *Aldrov. Bisulc. 397. fig.*  
 Brebis à plusieurs cornes, *Buffon, H. N. xi. 354.*  
 Belier et Brebis d'Island, *Buffon, H. N. xi. t. 31, 32.*  
 Four-horned Ram, *Knight, Mus. Anim. Nat. f. 680.*  
 Dumba Sheep, *Gray, List Hodgson Mam. & Birds B. M. Hab. India; Nepal.*
31. The Puchia or Hindostan Dumba.  
*Ovis puchia* or *O. puchia*, *Hodgson, Journ. Asiat. S. B. xvi. 1016. t.*  
*Cabul Dumba*, *Hodgson, l. c. ii. 390, iv. 330.*  
 Skull of a "Cabul Dumba" Sheep.  
 Drawing of "Indian Doomba Sheep."—*Hodgson, Icon. ined. B. M. t. 184. f. 1, copied t. 185. f. 1.*  
 Drawing of "Cabool Doomba Sheep."—*Hodgson, Icon. ined. B. M. t. 184. f. 2, copied t. 185. f. 2.*  
 Four-horned Sheep, with long mane on neck below. Drawing in India ink, with a pencil sketch on the back.—*Bank. Icon. Mam. t.*  
 Drawing in colours, by S. Parkinson, after nature.—*Bank. Icon. Mam. t., copied Pennant, Quad. i. t. 3. f. 2.*  
 Drawing in colours, by F. Masson, in lat. 50°, long. 115°.—*Bank. Icon. Mam. t.*  
*Hab. India.*
32. The Short-tailed Sheep.  
*Ovis brachyura borealis*, *Pallas, Spic. Zool. xi. 61; Zool. Ross. Asiat. i. 233.*  
*Hab. Northern Russia.*
33. Sheep of Tartary, *Moorcroft; Lesson, Compl. Buffon, x. 313.*  
*Hab. Tartary.*  
 "Eat bones like a dog."

## 2. CAPROVIS. MOUFFLONS or WILD SHEEP.

Horns (in male only) bent in a half circle over the back, heavy, wrinkled, angular and compressed. Muffle none. Nose ovine. Eye-pits small, indistinct. Tail short, deer-like, without any tail-disc. Hair thick, entirely concealing the woolly under-coat. Beard none. Caprine odour none. Skull with small deep pit in front of orbit.

*Caprovis*, *Hodgson, Var. Gen. Ruminants, 1847, 18.*  
*Ovis* § *Musimon*, *Gray, Knowsley Menag.*

A. Musimon. Tail very short. Horns with the outer edge not prominent and rounded. Throat and sides with a dark streak.

1. CAPROVIS (MUSIMON) VIGNEI. The SHA OF KOCH.

Throat with a fringe of black hairs. Fur rufous brown. Lateral streak, rings on lower part of feet, blackish. Belly and back of shanks, and ring above hoofs, white. Skull: suborbital pit deep and rounded.

Ovis Vignei, Blyth, P. Z. S. 1840; *Ann. & Mag. N. H.* vii. 251. t. 5. f. 9, horns; Gray, *List Mamm. B. M.* 169; *List Osteol. B. M.* 61.

? Mountain Sheep, Lord in Burnes' Cabool, 384; *Ray Soc. Rep.* i. 64.

Ovis Musimon Vignei, Gray, *Knowsley Menag.*

Wild Sheep of Hindu Koosh, Vigne, *Journ. Asiat. Soc. Bengal*, 1840, 440; *Ray Soc. Rep.* i. 64.

Ovis cycloceros, Hutton in McClelland, *Calc. Journ. N. H.* iii. t. 19. Sha (not Sna), in *Little Thibet*.

Koch, at Suliman's Range.

Koh i poombar, by the Afghans.

Hab. Thibet.

Male. Ladank. Presented by the East India Company.

Horns, with skin of forehead. Thibet?

OSTEOLOGY. Blyth, *Proc. Zool. Soc.* 1840, 71.

Skull and horns. North India. Presented by the East India Company.

Horns, separate. North India. Presented by the East India Company.

Horn, single. North India. Presented by the E. India Company.

Skull. Thibet. From Mr. Argent's Collection.

Skull. Thibet. From Mr. Argent's Collection.

Horns. Thibet. From Mr. Argent's Collection.

Horns, separate. Thibet. From Mr. Argent's Collection.

Two skulls. Ladank. Presented by the East India Company.

2. CAPROVIS (MUSIMON) ORIENTALIS. The ARMENIAN SHEEP.

Fulvous chestnut, darker on the back. Limbs and under parts whitish. Tuft of black and white hair above the wrist. Males with a dark line of more or less elongated hair on front of neck, widening into a patch on the chest. "Horns of male subtriangular, compressed and very deep, with strongly-marked angles, and cross striæ, diverging backwards, with slight arcuation near the tips, which incline inwards."—Blyth.

- Ovis orientalis*, *Gmelin, Reise Russland*, iii. 486. t. 55; *Pallas, Spic. Zool.* xii. 15. t. 5. f. 1, horns; *Keyserlin. Europ. Wirb.*  
*Ovis Gmelinii*, *Blyth, P. Z. S.* 1840, 69; *Ann. & Mag. N. H.* vii. 250. t. 5. f. 8, horns.  
*Egoceros Musimon*, *Pallas, Zool. Ross. Asiat.* 360.  
*Ovis Musimon*, *Brandt & Ratz. Zool. Med.* t.  
*Ovis (Musimon) orientalis*, *Gray, Knowsley Menag.*  
*Hab.* Armenia; Erzzeroom.

Half-grown male. Armenia. Presented by the Hon. R. Curzon.  
 Skull. Tunis. From Mr. Fraser's Collection.

### 3. CAPROVIS MUSIMON. The MOUFFLON.

Brown.

- Hircus Capra orientalis*, *Brisson, R. A.* 71 (not *Gmelin*).  
*Capra Ammon* (part.), *Linn. S. N.* i. 47.  
*Capra Ammon*, *Blumenb. Naturg.* x. 117.  
*Ovis Ammon* (part.), *Erazl. Syst.* 250; *Gmelin, S. N.* i. 200.  
*Ovis Musimon*, *Schreb. Saugth.* viii. 242. t. 286; *Blyth, P. Z. S.* 1840, 72; *Ann. & Mag. N. H.* vii.  
*Ovis Musimon*, *Musimon*, *Gray, Knowsley Menag.*  
*Ovis aries fera*, *Desm. Mamm.* 488.  
*Ægionomus Ammon* (part.), *Ranz. Elem. Zool.* ii. 652.  
*Ovis Musimon*, *H. Smith, Griffith A. K.* v. 875; *Bonap. Faun. Ital.* i.  
*Capra Musmon*, *Fischer, Syn. Mam.* 488; *Bonap. Fauna Ital.* 45. t. 1 ♂.  
 Moufflon or Musmon, *Bewick, Quad.* 74. fig.  
 Siberian Goat (part. Corsican var.), *Penn. Syn.* i. 18.  
 Wild Sheep (part. Corsican var.), *Penn. Hist.* i. 39.  
 Ophion, *Plin. Hist. Nat.* xxviii.—xxx.  
 Musmon, *Plin. Hist. Nat.* viii.  
 Musmon or Musimon, *Gesner, Quad.* i. 823. fig.  
 Musimon, *Raii Quad.* 75.  
 Muflone, *Cette H. Sard. Quad.* i. 111. t. 2 ♂. t. 3 ♀.  
 Moufflon, *Buffon, H. N.* xi. 352. t. 29; *Cuvier, R. A.* i. 262, ed. 2. i. 277; *F. Cuvier, Mam. Lith.* t.; *Knight, Mus. A. Nat.* f. 673, 674.  
 Wildes Scharf, *Gesner, Thierb.* 155. fig.  
 Muffione in *Sardinia* = Murvoni ♂, Murva ♀, *Blyth*.  
 Muffolo in *Corsica* = Mufro ♂, Mufra ♀, *Blyth*.  
*Hab.* Sardinia and Corsica.  
 Var.? Horns more like *O. orientalis*, *Blyth*.  
 Moufflon (from Cyprus), *Brandt & Ratz. Med. Zool.*  
*Ovis Ophion*, *Blyth, P. Z. Soc.* 1840, 73; *Ann. & Mag. N. H.* vii. 250, from *Brandt*.

*Ovis Cypricus*, *Blasius*, *Bull. Soc. Moscon*, 1841, 568, from *Brandt*.  
*Tragelaphus*, *Bellon*.

*Hab.* Cyprus, *Mus. Berlin*; Candia, *Bellon*; Corsica.

#### OSTEOLOGY.

*Moufflon*, *Daub. Buff. H. N.* xi. t. 30.

B. Argali. Tail very short. Horns long, heavy, with the tips bent inwards, and with the two edges equally prominent. Throat and side without any dark streak. The suborbital pit in the skull is moderately broad and concave. "Tear-bag and interdigital pores distinct."—*Hodgson*, *J. A. Soc. Calcutta*, 1846, 308.

#### 4. CAPROVIS (ARGALI) ARGALI. The ARGALI.

*Ægoceros Argali*, *Pallas*, *Zool. Ross. Asiat.* i. 231. t. 20, 21;

*Tilesius*, *Nov. Act. Acad. Nat. Cur.* xii. 279. t. 23, head; *Bojanus*, *Nov. Act. Nat. Cur.* xii. 291. t. 24, 25, skull.

*Ovis fera* *Sibirica*, *Argali dicta*, *Pallas*, *Spic.* xi. 3. t. 1, 2.

*Ovis Argali*, *Bodd*.

*Capra Ammon*, part., *Linn. S. N.* i. 97.

*Capra Ammon*, *Fischer*, *Syn.* 487; *Cuvier*, *R. A.*

*Ovis Ammon*, part., *Erzleb. Syst.* 250; *Schreb. Saugth.* t. 288.

*Acriodorceas pygargus* seu *Ovicapra rupestris*, *S. Gmelin*, 337.

n. 14, cited by *Pallas*; *Steller*, *Besch. Kamtsch.* 127.

*Rupicapra cornubus arietinis*, *J. G. Gmelin*, *Nov. Comn. Petrop.* iv. 388. 53. t. 8 b. f. 2, 3.

*Siberian Goat* (part.), *Penn. Syn.* i. 18 (*Synonyma*).

*Wild Sheep* (*Siberian*), *Penn. Quad.* i. 38; *Arctic Zool.* i. 12.

*Argali*, *Shaw*, *Zool.* ii. t. 101.

*Argali de Sibérie*, *Cuvier*, *Règ. Anim.* i. 267.

*Hab.* Siberia.

Male and female. Siberia.

OSTEOLOGY. *Tilesius*, *l. c.* xii. t. 23; *Bojanus*, *l. c.* xii. t. 24, 25.

*Var.* 1. *Musimon*, *Steller*, *Kamtsch.* 127.

*Ovis Nivicola*, *Eschsch.* *Zool. Atlas*, t.; *Lesson*, *Comp. Buffon*, x. 313.

*Argali* seu *Belier sauvage*, *Wangl.* *Nord Sibérie*, ii. 158, 168.

*Hab.* Kamtschatka.

*Var.* 2. *Ovis Argali*, *Hodgson*, *J. A. S. Beng.* i. 347.

*Ovis Ammon* var., *Hodgson*, *Proc. Zool. Soc.* 1833, 105; 1834, 99; *Journ. Asiat. Soc. Beng.* xi. 283; *Institute*, n. 101, 102;

*Blyth*, *J. A. S. Beng.* x. 863; *Lesson*, *Compl. Buffon*, x. 313.

*Ovis Bambhera*, *Hodgson*, *Cat. MSS.*; *Institute*, n. 101, 102.

Nahoor Sheep (young male), *Hodgson, Asiat. Research* xviii. t. 1.  
*Ovis Ammonoides*, *Hodgson, J. A. S. Beng.* x. 1841, 236. t. 1.  
 f. 1, skull; x. 913, xi. 283; *Calcutta Journ. N. Hist.* iv. 291;  
*Gray, Hodgson Coll. B. M.* 29.

*Ovis Hodgsonii*, *Blyth, Proc. Zool. Soc.* 1840, 65; *Ann. & Mag.*  
*N. H.* xii. 199. t. 5. f. 9; *Journ. A. S. Beng.* x. 284. 863.

Bambhera (or *Ovis Ammon*), *Ogilby in Royle's Himal.* 75.

Bambhera or Bhaaral, *Hodgson, MSS.*

*Hab.* Himalaya; Nepal.

Fragments of the skin of a male.

A flat skin of a young male.

A flat skin of a female.

Skin of young, without head. Northern hill region of Nepal.

Presented by B. H. Hodgson, Esq.

Male. Ladank. Presented by the East India Company.

OSTEOLOGY. *Hodgson, J. A. S. Bengal.* x. t. 1. f. 1; *Blyth, Ann.*  
*& Mag. N. H.* xii. t. 5. f. 9.

Pair of horns of adult. Nepal. Presented by B. H. Hodgson,  
 Esq.

Pair of horns, adult. Nepal. Presented by B. H. Hodgson, Esq.

Pair of horns of young ram. Nepal. Presented by B. H.  
 Hodgson, Esq.

Skull and horn of a half-grown ram. Nepal. Presented by  
 B. H. Hodgson, Esq.

Skull, with horns. Nepal. Presented by B. H. Hodgson, Esq.

Two skulls. Ladank. Presented by the East India Company.

#### ICON.

The Bhaaral. Drawing of skull of young male.—*Hodgson,*  
*Icon. ined. B. M.* t. 186. f. 1, t. 187. f. 9, 10.

Drawing of male, female and young.—*Hodgson, Icon. ined. B.*  
*M.* t. 176, with details of the head, t. 177.

Drawing of head of adult.—*Hodgson, Icon. ined. B. M.* t. 178.

Drawing of skull of old male.—*Hodgson, Icon. ined. B. M.*  
 t. 186. f. 3, 4.

Drawing of skull of female.—*Hodgson, Icon. ined. B. M.*  
 t. 187. f. 3, 4.

“The Wild Sheep inhabit the snowy barriers of High Asia,  
*Ammon* of Siberia being confined to the remoter, and *Ammonoides*  
 of Thibet to the nearer ranges. They are distinguished by  
 their angular, compressed, nearly wrinkled horns, turned almost  
 into a perfect circle, and their flat points directed forwards and out-  
 wards, the short-disked tail, and absence of a beard.”—*Hodgson.*

The Wild Sheep proper, or *Nyens* of the Thibetans, never mix  
 with the *Nahoors*. They are far more hardy, active and inde-

pendent than any tame breeds of their kind, as may well be supposed from their terrific abode amid the snowy peaks of Hemachal. They are gregarious, feed in the glens, seek refuge on the tops, and leap and run with deer-like power, though as climbers inferior to the Jharal (*Hemitragus*), or as leapers to the *Musk*. They are often snowed up for days without perishing, unless their breathing-holes betray them to man, a more terrible foe than the direst inclemency of the season. They rut in winter, gestate about 160 days, or perhaps six months, and breed early in summer.

The *Nyens* or *Bambheras*, or Wild Sheep, seldom or never cross the Hemachal, the Indian side of which range is the special habitat of the *Nahoors*, while to the north and west beyond Thibet our animal is replaced by other species, so that Thibet may be considered as the special habitat of one species (*O. Ammonides*), and the plateaux north of Thibet as far as the Altai of another (*O. Ammon*), cited as types of the true ovine form; and it may be added, that the six sorts of tame Sheep of Thibet and the sub-Himalayas, all without exception exhibit the essential characters of that form.

There are several species that may be confounded under this head; the Siberian *Argali* is found in the most northern part of that country, and it is probably different from the Himalayan animal; but I have not been able to discover any difference between the specimen received from Mr. Hodgson and those which were sent from Siberia by the Russian naturalist.

Pallas regards this and the next as one species, and observes:—"Nobilissimum et statura et agilitate animal ab Altaico et Medio Asiæ alpestri jugo; per omnem orientalem montium tractum usque in Peninsulam Camtschatcam imo verosimillime in Continente Americæ locis maxime desertis vagatur, parvis gregibus hominis frequentiam fugiens, frigoris patiens, montibus apricis gaudens et asperrima loca frequentans. In occidentem vix propeccat, ubi præcedenti speciei (*Caprovius orientalis*), australiores situs amanti, locum concessit."—Pallas, *Zool. Ross. Asiat.* 232.

##### 5. CAPROVIS (ARGALI) CANADENSIS. The TAYE or BIG HORN.

Grey-brown. Hair thin (in summer). Rump with a very large white disk, with a narrow vertical line to the base of the tail, it and the very short tail grey-brown like the back. Horns of male very large, subtrigonal at the base, ringed, nearly equilaterally triangular, bulging a little between the angles; the inner front angle obtusely prominent, the hinder double, forming a second plane at a slight angle with the superior one, and the inferior angle much rounded off.

*Ovis montana*, Geoff. *Ann. Mus.* ii. 351. t. 60; *Schreb. Saugh.* t. 294 B., cop. *Desm. E. M. t.* . f. ; *Desm. Mamm.* 486; *Richardson, Fauna Amer. Bor.*; *Gray, List Mamm. B. M.* 169.

*Ovis Ammon, Harlan, Fauna Amer.* 259.

*Ovis Pygarga, H. Smith, Griffith A. K.*

*Ovis cervina, Desm. N. Dict. Hist. Nat.* xxi. 553.

Big-horned Sheep, *Ord in Blainv. Journ. Phys.* 1817, 146.

*Ovis Canadensis, Shaw, Nat. Misc.* xv. t. 610, cop. *E. M. t.* 14.

f. 4; *Schreb. Saugh.* t. 214; *Richardson, Fauna Bor. Amer.*

t. 23; *Lesson, Compl. Buffon*, x. 311.

The Argali, *Godman, Nat. Hist.* ii. 329. t. 1; *Cook, Voy.*

Rocky Mountain Sheep, *Richardson.*

White Buffalo, *Mackenzie.*

Big Horn, *Lewis & Clerk, Travels.*

*Var. 2. Ovis Californiana, Douglas, Zool. Journ.* iv. 332; *Blyth,*

*P. Z. S.* 1840, 65; *Ann. & Mag. N. H.* vii. 199. t. 5. f. 5,

horns; *Féruss. Bull. Sci. Nat.* xviii. 447; *Lesson, Compl.*

*Buffon*, x. 213.

*Berindo, Forbes, California.*

Wild Sheep, *Venegos, California.*

*Missiliones, M. A. Pigafette in Ramusium*, i. 354 b, iii. 361 b.

*Hab. N. America; California.*

Male. California. Presented by Capt. Fitzroy, R.N.

Male and female. California. Presented by the Hudson's Bay Company.

Probably the same as the *Ammon* of Northern Siberia.

*b. Crumen none. Skull without infraorbital pit. Tail moderate.*

### 3. PSEUDOIS.

Horns smooth, subcylindrical, directed towards the sides (nearly at right angles with the axis of the body), and recurved backwards at the tip, with a distinct longitudinal ridge on inner? side. Forehead convex. Neck not maned. Tear-bag none. Interdigital pores distinct. Body covered with hair, dark lateral streak distinct. Tail well developed, not tufted at the end. Skull without any infraorbital pit or fissure. *Females* sometimes hornless.

*Pseudois*, sp., *Hodgson, Var. Gen. Ruminants*, 1846; *Journ. Asiat. Soc.* n. 173.

*Ovis β, Sundevall, Pecora*, 90.

1. PSEUDOIS NAHOOR. The NAHOOR or NERVATE or SNA.

*Ovis Nahura, Hodgs.; Gray, Cat. Mamm.* 170.

*O. Nayaaur, Hodgs. J. A. S. B.* i. 347.

O. Nahoor, *Hodgs. P. Z. S.* 1834, 107; *J. A. S. B.* iv. 1835, 492; x. 1840, 231. t. 1. f. 2, t. 2; *Blyth, Proc. Zool. Soc.* 1840, 66; *Ann. N. H.* vii. t. 5. f. 6, 7, x. 913, xi. 283; *J. A. S. B.* x. 867; *Sundevall, Pecora*, 90.

O. Nahur, *Hodgs. Calc. J. N. H.* iv. 291.

O. Thur, non var., *Hodgs. P. Z. S.* 1833, 105; 1834, 99?

Nepal Ram or Nervate, *Hardw. Icon. ined. B. M.* 10,975. t. 194, horns.

Ovis Ammon (part.), *Richardson, Fauna Bor. Amer.* i. 274.

Ovis Burrhell, part., *Blyth, P. Z. S.* 1838, 79.

Burthal or Nahoor, *Ogilby in Royle's Himal.* i. 75.

The Nahur or Nahoor, *Gray, List Hodgson Mamm. &c. B. M. Hab. Nepal*, Northern hilly region.

Female. Nepal.

Female, horns directed on one side. Nepal.

Horns of male on base. Nepal.

Horns of male on base. Nepal.

Male, skin in fragments. Nepal. Presented by B. H. Hodgson, Esq.

Male. Ladank. Presented by the East India Company.

#### OSTEOLOGY.

Base of skull of male, with horns. Nepal.

Skull of a young male. Nepal. Presented by B. H. Hodgson, Esq.

Various separate bones of body and limbs. Nepal. Presented by B. H. Hodgson, Esq.

Skull. Nepal. Presented by B. H. Hodgson, Esq.

Skull, female. Nepal. Presented by B. H. Hodgson, Esq.

Horns.

Skull. India. From Mr. Argent's Collection.

Horns. India. From Mr. Argent's Collection.

Two single horns. India. From Mr. Argent's Collection.

Var. 1. Smaller, more robust, with shorter ears and very dark horns, without white.

Burul, *Hutton, Journ. Asiat. Soc. Beng.* 1839, 994; 1840, 568; *Bengal Sporting Mag.* 1839, 295.

Ovis Bhurrel (Bhurrell Sheep), *Ogilby, P. Z. S.* 1838, 79; *Waterhouse, Cat. Zool. Soc. Mus. Supp.* 9. n. 406, 1839.

Ovis Burrhel, *Blyth, P. Z. S.* 1840, 67; *Ann. & Mag. N. H.* vii. 248. t. 5. f. 7, horns; *Sundevall, Pecora*, 90.

Pseudois Burthal, *Hodgson, J. A. S. Bengal*, 1846, 308.

*Hab.* Barendra Pass.

The Nahoor inhabit the Himalayas; they are distinguished from the Sheep by the want of the eye-pits; the rounded, uncom-



pressed, smooth horns, directed upwards and backwards with great divergency, and with their round points again bent inwards; by their short, deer-like tail, which is rather longer than that of the Wild Sheep and not disked. They rut in winter, gestate 5½ months, and breed in the summer.

Their habits resemble those of the *Nyens* or Wild Sheep, but the two never commingle nor approach each other, nor will the male, however long and completely they are tamed, have sexual commerce with domestic Sheep. Ribs 13 pair.—*Hodgson*.

The *Nahoor* is much less easily acclimatized in foreign parts than the *Jharal*, in confinement more resigned and apathetic. I have tried in vain to make the *Nahoor* breed with tame Sheep, because he will not copulate with them.—*Hodgson, J. A. S. B. iv. 493.*

#### 4. AMMOTRAGUS.

Forehead concave. Crumen none. Horns subcylindrical, turning outward backward, with the tips inward towards each other. Chin not bearded. Neck maned beneath. Tail rather elongate, tufted at the end. Skull with no suborbital pit nor fissure.

*Pseudois*, sp., *Hodgson*.

*Ammotragus*, *Blyth*; *Gray, Knowsley Menag.*

*Ovis* §  $\gamma$ , *Sundevall, Pecora*, 90.

#### 1. AMMOTRAGUS TRAGELAPHUS.

*Ovis Tragelaphus*, *Desm. Mamm.* 480. 1; *Blyth, Ann. N. H.* vii.

258. 261; *Gray, List Mamm. B. M.* 169; *List Osteol. B. M.* 61.

*Ovis ornata*, *Geoff. Egypt. t.*; *I. Geoff. Dict. Class. H. N.* xi.

264; *Lesson, Comp. Buffon*, x. 312.

*Capra Jaela*, *H. Smith, Griffith A. K.* t. 192, not text.

*Ammotragus Tragelaphus*, *Gray, Knowsley Menag.* 40.

*Mouflon d'Afrique*, *Cuv. R. A.* i. 268; *F. Cuvier, Mam. Lithog.* t.

*Mouflon à manchettes*, *Explor. Sci. Alger. Mam.* t. 7.

Bearded Sheep, *Penn. Quad.* i. 46.

Siberian Goat, *Penn. Syn. Quad.* i. 18 (the skin described as from India, not synon.).

*Tragelaphus seu Hircocervus*, *Caii Opusc.* 59.

Aoudad, *Jackson, Morocco*; *Knight, Mus. Anim. Nat.* f. 671.

Fichtall or Lerwea, *Shaw, Trav.* 243.

Antilope Lervia, *Pallas, Spic.* xii. 12; *Gmelin, S. N.* i. 182;

*Fischer, Syn.* 480.

*Hab.* N. Africa.

Bad state. North Africa.

Male, adult. North Africa.

## OSTEOLOGY.

Horns. North Africa.

Horns. North Africa.

Horns. North Africa.

Horns.

Pennant, in his *Synopsis*, i. 18, confounded this animal with the *Musimon*; and Pallas (*Zool. Ross. Asiat.* i. 230) on his authority gave India as the habitat of the latter, but the subgenus was not known to inhabit the Himalaya at that period.

## Tribe 2. GIRAFFINA.

Horns covered with a hairy skin, with a tuft of hair at the tip.

Camelopardina, Gray, *Ann. Phil.* 1825; *Cat. Mamm. B. M.* xxvi.

Camelopardalis, Cuv. *Tab. Elem.* 1798.

Giraffidæ, Gray, *L. M. Rep.* xv. 307, 1821; H. Smith, *Griffith A. K.* v.; J. Brookes, *Cat. Mus.* 63, 1828.

Devexa, Illiger, *Prod.* 104, 1811.

Plenicornia b, Latr. *Fam. Nat.* 1821.

Camelopardalidæ, Selys Longchamps, 1842.

Elaphiens, part., Pomel. l. c. 184.

Ruminalia stereoceria, part., Rafin. *Anal. Nat.* 56, 1815.

Ruminantia B. Pygnoerate, part., Bronn, *Index Palæont.* ii. 709.

Cameli β, Wagler, *N. Syst. Amph.* 4-31, 1830.

Cervidæ (part.), Ogilby, *P. Z. S.* 1836, 134.

Cervicornia §, Sundevall, *Pecora*, 52.

Unguligrada, part., Sundevall, *Pecora*, 52.

Ossicornia, Rüppell, *Verz. Senck. Samml.* 183, 1845.

Camelopardalina, Sundevall, *Pecora*, 52.

Camelopardinæ, Lesson, *N. Tab. R. A.* 168, 1842.

Les Girafes, F. Cuvier, *D. Sci. Nat.* lix. 513.

## 1. GIRAFFA.

Lip not grooved, entirely covered with hair, much produced before the nostril. Tongue very extensile. Neck very long. Body short. Hinder legs short. False hoof none. Tail elongate, with a tuft of thick hair at the end. Africa. Living in families on the leaves of trees and shrubs.

Giraffa, Brisson, *R. A.* i. 37, 1763; Storr, 1780; Scopoli; Rafinesque, *Anal. Nat.* 56, 1815.

Cervus, sp., Linn. *S. N.* ed. 12. 92; Erxleb. *S. A.* 294, 1777.

Camelopardalis, Ray, *Syn.* 90; Aldrov.; Cuvier, *Tab. Elem.* 1798; Schreb. *Saugth.*; Lesson, *N. Tab. R. A.* 168; Desm. 1804; Illiger, 1811; Ogilby, *P. Z. S.* 1836, 134; J. Brookes, *Cat. Mus.* 63; F. Cuvier, *D. S. N.* lix. 513; Fischer, *Syn.* 455.

*Camelopardalus*, Charlet.

Giraffe, *Penn. Hist. Quad.* i. 58.

1. GIRAFFA CAMELOPARDALIS. The GIRAFFE or CAMEL-LEOPARD.

*Cervus Camelopardalis*, Linn. S. N. i. 92; *Eræleb. Syst.* 294.

C. Capensis, Geoff.; *Ogilby*, P. Z. S. 1836, 134; *Lesson*, N. Tab. R. A. 168.

*Camelopardalis Giraffa a*, *Sundevall*, *Pecora*, 52.

*Giraffa Camelopardalis*, *Brisson*, R. A. 61; *Zimm. Geog. Gesch.* ii. 125.

*Camelopardalis Girafa*, *Gmelin*, S. N. i. 181; *Schreb. Saugth.* 1140. t. 255-255\*; *Desm. N. Dict.* xiii. 165. t. E. 6; *Mamm.* 449; *F. Cuv. Dict. Sci. Nat.* xviii. 555; *Lesson*, N. Tab. R. A. 168; *Gray*, *List Mamm. B. M.* 170; *List Osteol. B. M.* 62; *Owen*, *Trans. Zool. Soc.* ii. t. 40; *Thunb. Mem. Pétersb.* iii. 311; *I. Geoff. Dict. Class. H. N.* vii. 354; *Cretzschm. in Rüppell*, *Zool. Atlas*, 23. t. 8, 9; *Fischer*, *Syn.* 455. 623; *H. Smith*, G. A. K. v. 807.

Var. 1. Paler.

*Camelopardalis Girafa β. Æthiopica*, *Sundevall*, *Pecora*, 52; *Act. Stockh.* 1842, 244.

*Camelopardalis Sennaarensis*, *Geoff.*

*Camelopardalis Æthiopicus*, *Ogilby*, P. Z. S. 1836, 134.

*Camelopardalis*, *Plin. H. N.* viii.; *Gesner*, *Quad.* 160. fig.; *Alpin. Æg.* i. 236. t. 14. f. 4.

*Camelo-pardalus*, *Jonst. Quad.* t. 39; *Cateret*, *Phil. Trans.* lx. 27. t. 1.

*Camelus Indicus*, *Jonst. Quad.* t. 40.

Gyrafte, *Belon. Obs.* 118. fig. 119.

Tragus Giraffa, *Klein*, *Quad.* 22.

*Camelopard*, *Penn. Syn.* 10; *Quad.* i. 65. f. 11.

*Kamel paard*, *Vosmaer. Besch.* t. , 1787.

Giraffe, *Thevet. Cosmogr.* i. 388. fig. 389; *Buffon*, H. N. xiii. 1; *Supp.* iii. 320. t. 64, 65; vii. 345. t. 81; *Levaill. Trav.* t; *Shaw*, *Zool.* ii. 303. t. 181, 182; *Lichtenst. Reise*, ii. 451, 463; *Clot Bey*, *Acad. Sci. Petersb.* vi. 6 (anat.).

Giraffe or Cameleopard, *Harris*, W. A. S. A. t. 11, and head; *Thibaut*, *Proc. Z. S.* 1836.

*Hab.* Africa; Cape of Good Hope; Æthiopia; Sennaar. West Africa; Senegal and Bornou.

Male (16 feet high) and female. S. Africa. Presented by W. Burchell, Esq., LL.D.

Male (in bad state). S. Africa. Presented by the College of Surgeons. Col. Paterson's specimen.

Young male. Central Africa. Presented by Capt. Clapperton, R.N., and Col. Denham.

Male (18 feet high). S. Africa. Presented by the Earl of Derby.

Male. N. Africa. From the Zoological Society's Collection.

OSTEOLOGY. *Alton, Act. Acad. Nat. Cur.* xii. 332. t. 36; *Owen, Trans. Zool. Soc.* ii. t. 40; *Rüppell, Zool. Atlas*, t. 9; *Geoff. Ann. Sci. Nat.* xi. 210; *Salze, Mem. Mus.* xiv. 68; *Owen, Trans. Zool. Soc.* ii. t. 40.

Skull of male. South Africa. Presented by Dr. Burchell.

Skull of male. Presented by Dr. Burchell.

\*Skeleton. N. Africa. From the Zoological Society's Collection.

#### ICON.

*Cervus camelopardalis*, *Linn.*—*G. Forster, Icon. ined. B. M.* t. 15, from a painting of Baron de Flettenberg, improved from a dry head; t. 16, a head.

"Mr. Wahlenberg has seen the dark and light coloured varieties mixed together in the same herd in tropical parts of Africa. The males are generally dark and the females pale, but this is not always the case. He has sent to Stockholm the skin of a female from Caffreland, which is as pale as the specimens from Sennaar."—*Sundevall in a Letter*, 1850.

Subfamily II. Horns deciduous, covered when young with a deciduous hairy skin, or entirely wanting.

#### Tribe 3. CERVINA.

Cutting-teeth none in upper jaws. Horns deciduous, often wanting in the females. Tarsus hairy on the hinder side. False hoofs distinct.

*Cervus*, *Linn.*; *Cuv. T. E.* 1798.

*Cervidæ*, *Gray, Lond. Med. Rep.* xv. 307; *Hodgson, Journ. Asiat. Soc. Beng.* 1850.

*Cervina*, *Gray, Ann. Phil.* 1825; *Cat. Mamm. B. M.* xxvii.

*Plenicornia a*, *Latr. Fam. Nat.* 63, 1825.

*Cervidæ*, *H. Smith, Griff. A. K.* v. 182; *Selys Longchamps*, 1842.

*Cervina*, *Selys Longchamps*, 1842; *Wiegman*; *Cabais in R. Schomburgk, Reisen in British Guiana*, iii. 784.

*Elaphiens*, *Pomet. l. c.* 184.

*Les Chevrotains et Les Cerfs*, *F. Cuv.* 1829.

*Ruminantia B. Pygnoerate*, part., *Bronn, Index Palæon.* ii. 709.

*Capreoli*, *Illiger, Prod.* 104, 1811; *Rüppell, Verz. Senck. Samml.* 183, 1845.

Les Cerfs (*Cervus*), *F. Cuvier, Dict. Sci. Nat.* lix. 513, 1829.

Cervidæ seu Ceratoënta, *J. Brookes, Mus. Cat.* 61, 1828.

Les Cerfs, *Lesson, Mamm.* i. 259.

Blainville proposed to divide the species thus:—A. Horns sessile. *a.* Horns divided. 1. Elans. 2. Rennes. 3. Daims. 4. Cerfs. 5. Axis. 6. Chevreuils. *b.* Horns simple. 7. Daguetts. B. Horns pedicelled. 8. Cervules. In the same note he divides the species according to their geographic distribution. —*Desm. Mamm.* 449, 1822.

M. Bravard divides the Fossil Deer of Puy du Dôme into two subgenera, thus:—1. *Cataglochis*, with the lower anterior snag on the crown. 2. *Anoglochis*, with it above the crown.—*Fide Lesson, Hist. Nat. Mamm.* 1836, p. 259.

Lesson, in the *Manuel de Mammalogie*, 1827, p. 355, thus arranges the species of the genus *Cervus*:—A. 1. Elans. B. 1. Rennes. 2. Daims. 3. Cerfs propr. dit. 4. Axis \* tachetées, \*\* sans taches. 5. Chevreuils \* ancient continent, \*\* nouveau continent. 6. Daguetts. 7. Cervules.

Colonel Hamilton Smith has adopted the section proposed by De Blainville; he regarded them as sections or subgenera, and gave them the following Latin names:—1. *Alces*. 2. *Rangifer*. 3. *Dama*. 4. *Elaphus*. 5. *Rusa*. 6. *Axis*. 7. *Capreolus*. 8. *Mazama*. 9. *Subulo*. 10. *Stylocerus*.—*Griffith, A. K.* v. 1827; translated *Fischer, Syn. Mam.* ii. 612, 1830; and *Lesson, Compl. Buffon Mamm.* x. 259, 1836.

Professor Sundevall proposed the following genera and subgenera:—1. *Alces*. 2. *Rangifer*. 3. *Cervus*. A. *a.* *Cervus*. *β.* *Hippelaphi*. *γ.* *Hyelaphus*. *δ.* *Dama*. B. *a.* *Mazama*. *β.* *Blastoceri*. *γ.* *Furciferes*. *δ.* *Subulones*. 4. *Capreolus*. 5. *Prox.* (6. *Moschus*. 7. *Tragulus*.)

Mr. Gray, in the *Proceedings of the Zoological Society* (1836, 67), proposed to arrange the species of Deer into three sections, according to the position of certain tufts of hair on the hind-legs, thus:—1. A tuft of hair below the middle of the outside of the metatarsus. 2. Above the middle of the outside of the metatarsus; and 3. With a tuft of hair on the inside of the hock. Dr. Sundevall in his *Pecora* has adopted these divisions. These tufts have the advantage of being found in all ages and in both sexes, so that they can be consulted when the horns are deficient.

M. Pucheran (*Dict. Univer. Hist. Nat.* iii. 314, 1843) divides the Deer as follows:—A. With flat horns. 1. C. *Dama* (and var. *mauricus*). B. With round horns. *a.* With more than two andouilleres. 1. C. *Virginianus*. 2. C. *Duvaucellii*. 3. C. *Wallichii*. 4. C. *Elaphus*. 5. C. *Wapiti*. 6. C. *macrotis*. 7. C. *macrurus*. 8. C. *occidentalis*. 9. C. *Elaphoides*. *b.* With only two andouilleres. 10. C. *Hippelaphus*. 11. C. *Aristotelis*. 12.

C. equinus. 13. C. marianus. 14. C. Peronii. 15. C. unicolor. 16. C. Axis. 17. C. porcinus. 18. C. nudipalpebra. 19. C. Leschenaultii. 20. C. Capreolus. 21. C. Mexicanus. 22. C. paludosus. 23. C. campestris. c. *Cerfs daguets*. 24. C. Nemorivagus. 25. C. rufus. This essay is a mere compilation without any examination.

M. Pucheran, in his "Monographie des espèces du Genre Cerf" (*Comptes Rendus Acad. Sci.* 1849, ii. 775), divides the tribe *Cerviens* into four genera:—1. Alces. 2. Tarandus. 3. Cervulus; and 4. Cervus.

Since the publication of Cuvier's Essay on Deer (*Ossements Fossiles*, iv.), where he exhibited the development of the horns of several species, and in which he described several species from the study of the horns alone, many zoologists have almost entirely depended on the horns for the character of the species; and Mr. Hamilton Smith has been induced to separate some species on the study of a single horn. But the facilities which menageries have afforded of studying these animals, and watching the variations which the horns of the species present, have shown that several most distinct but allied species, as the Stag of Canada and India, have horns so similar, that it is impossible to distinguish them by their horns. On the other hand, it has shown that animals of the same herd, or even family, and sometimes even the same specimen, under different circumstances, in succeeding years have produced horns so unlike one another in size and form, that they might have been considered, if their history was not known, as horns of very different species. These observations, and the examination of the different cargoes of foreign horn which are imported for the uses of the cutler, each cargo of which is generally collected in a single locality, and therefore would most probably belong to a single species peculiar to the district, have proved to me that the horns afford a much better character to separate the species into groups than to distinguish the allied species from one another.

Colonel Hamilton Smith, in his *Monograph of the Genus*, separated them into genera according to the form of the horns.

In the *Proceedings of the Zoological Society* for 1836 I drew attention to the glands on the hind-legs, as affording very good character to arrange the genera proposed by Colonel Smith into natural groups, which in most particulars agreed with the geographical distribution of the species.

Dr. Sundevall, in his Essay on *Pecora*, has availed himself of the characters suggested in my paper, and has also pointed out some other external characters, such as the form and extent of the muffle, which afford good characters for the distinction of these animals, characters which, I firmly believe, are much more

important for the distinction of the genera and species than those derived from the form of the skull or the modifications of the teeth, or the form and size of the horns, as they are not, like those parts, so liable to alteration from age, local circumstances, and other changes during the growth of the animal; and the characters derived from these parts can be seen in the females as well as the males, which is not the case with the horns, as they can only be observed in the male sex.

These examinations have shown that the form and extent of the muffle, the position and presence of glands on the hind-legs, the general form of the horns, and the kind of hair which forms the fur, taken together, afford the best characters for the arrangement of the species into natural genera, and these genera into groups. And I believe that the progress of zoology, and the natural arrangement and affinities of animals, are best promoted by the general study of all the parts of the animal taken together, rather than confining one's attention to any set of characters, and believing them as much more important than the others.

The Deer may be thus divided:—

- A. *The Deer of the Snowy Regions* have a very broad muzzle entirely covered with hair. The horns are expanded and palmate; and the fawns are not spotted.
  - a. *The Alpine Deer* have no basal anterior snag to the horns, and a small bald muffle between the nostrils, as the genus *Alcis*.
  - b. *The Rangiferine Deer* have a large, basal anterior snag to the horns, close on the crown or bur, and no muffle, as *Tarandus*.
- B. *The Deer of the Temperate or Warm Regions* have a tapering muzzle ending in a bald muffle. The fawns, and sometimes the adults, are spotted.
  - c. *The Elaphine Deer* have a distinct, anterior basal snag to the horns, the muffle broad and separated from the lip by a hairy band, and the tuft of hair on the outside of the hind leg above the middle of the metatarsus, as *Cervus* and *Dama*.
  - d. *The Rusine Deer* have a distinct, anterior basal snag to the horns, the muffle very high and not separate from the edge of the lips, and the tuft of hair on the outside of the hind leg above the middle of the metatarsus, as *Recervus*, *Panolia*, *Rusa*, *Axis*, *Hyelaphus*, *Cervulus*.
  - e. *The Capreoline Deer* have no basal anterior snag to the horns, the first branch being some distance above the bur, the crumen (and pit in the skull) generally small, as *Capreolus*, *Cariacus*, *Blastocerus*, *Furcifer*, *Coassus*, and *Pudu*.

The *Alcine* and *Rangerine* Deer are confined to the northern part of both continents; the *Elaphine* and *Rusine* Deer to the Eastern World (the latter almost exclusive to the warmer part of Asia). All the *Capreoline* Deer are peculiar to America. The only exceptions to these rules are, the Wapity Deer of the *Elaphine* group is found in Northern America, and the *Roebuck* and *Aku* of the *Capreoline* group are found in Europe and North Asia.

- I. The Deer of the Snowy Regions. *Muzzle very broad, entirely covered with hair. Fawns not spotted. Horns expanded and palmated. Tail short. Skull: nose-cavity very large. Intermaxillaries not reaching to the nasals.*

Deer of the Snowy Region, Gray, *Ann. & Mag. N. H.* 1850; *Gleanings Knowsl. Menag.*  
Cervus § 1, *Blainv. Bull. Soc. Phil.* 1816, 74, note.

1. Alcine Deer (*Alceæ*). *Horns without any basal snag near the crown. Muzzle with a small bald muffle between the nostrils.*

Alcine Deer, Gray, *Ann. & Mag. N. H.* 1850; *Knowsl. Menag.*  
*Anoglochis*, sp., *Bravard.*  
*Alcedæ*, J. Brookes, *Mus. Cat.* 61, 1828.

#### 1. ALCES.

*Alce*, H. Smith.

Muzzle very broad, produced, and covered with hair, but there is a small, moist, naked spot in front of the nostrils. Neck short and thick. Hair thick and brittle. Throat rather maned in both sexes. Hind-legs have the tuft of hair rather above the middle of the metatarsus. Males have palmated horns, subcylindrical at the base, expanded and palmated above, without any basal snag. The nose-cavity in the skull is very large, reaching behind to a line over the front of the grinders. The intermaxillaries are very long, but do not reach to the nasal. The nasals are very short.—See *Cuv. Oss. Foss.* iv. t. 9. f. 49.

They live in woods in the northern parts of both continents.

Cervus § 1. *Alces*, H. Smith in *Griffith A. K.* v. , 1827.  
*Alces*, Gray, *L. Med. Repos.* 1821; *List Mamm. B. M.*; *Lesson*, *Mamm.* i. 259; *N. Tab. R. A.* 269, 1842; *Ogilby*, *P. Z. S.* 1836, 135; *Sundevall*, *Pecora*, 54.  
*Elans*, *Blainv. in Desm. Mamm.* ii. 448, 1822.  
Cervus, sp., *Fischer*, *Syn.* 441.



## 1. ALCES MALCHIS. The ELK or MOOSE.

Dark brown. Legs yellower.

*Alces antiquorum*, Rüppell, *Verz. Senck. Samml.* 183, 1845.

*Cervus Alces*, Linn. *S. N.* i. 92; Gmelin, *S. N.* i. 175; Brisson, *R. A.* 93; Pallas, *Zool. R. A.* i. 201; Zimm. *Geog. Gesch.* ii. 127; Schreb. *Saugth.* 968. t. 246 a, b, c, d; Desm. *N. Dict. H. N.* v. 519; *Mamm.* 430; F. Cuvier, *Dict. Sci. Nat.* vii. 461; Davelli, *K. Sv. Vet. Handl.* 1819, 207; Desmoul. *D. Class. H. N.* iii. 374; Fischer, *Syn. Mam.* 441. 613; Richardson, *Fauna Bor. Amer.* 232.

*Cervus Alces*, H. Smith, *Griffith A. K.* v. 771.

*Alces* (*Cervus*) *Alces*, Sundevall, *Pecora*, 54.

*Alces Malchis*, Ogilby, *P. Z. S.* 1836, 135.

*Alces palmatus*, Gray, *List Mamm. B. M.* 182; *Cat. Osteol. B. M.* 70.

*Alces Europeus*, J. Brookes, *Mus. Cat.* 61.

*Moose Deer*, Dudley, *Phil. Trans.* n. 368. 165; Dale, *Phil. Trans.* n. 444. 384.

*Moose or Elk*, Catesby, *Carol. App.* 27.

*Elk*, Laws. *Carol.* 123; Penn. *Syn.* 40. t. 7; Quad. i. 105. t. 17; Shaw, *Mus. Lever.* i. 33. t. 8; Gen. *Zool.* ii. 261. t. 174, 175; Knight, *Mus. A. N.* f. 585, 586, 605.

*Elan*, Buffon, *H. N.* xii. 79. t. 7; Supp. vii. 318. t. 80; Perrault, *Anim.* i. 179. t. 25; Cuvier, *R. A.* i. 254; Oss. *Foss.* iv. 64.

*Orignal*, Lu. Houtan, *Voy.* 72; Charlevo. *Nouv. France*, iii. 126; Dierville, *Acad.* 122; Allam, *Buff. H. N.* xv. 50. t. 2; Buffon, *Supp.* iii. 133; Fischer, *Syn.* 441. 613.

*American Black Elk* (*C. Alces*  $\beta$ .), Ham. Smith, *Griffith A. K.* v. 771.

*Elch*, Wangenheim, *Neu. Schrift. Berl. Naturf. Fr.* i. 1. t. 1.

*Loss*, *Russians in Siberia.*

\* *Flat-horned Elk*, Jeffers. *Notes Virginia*, 49.

*Cervus palmatus* Alce, Klein, *Quad.* 577. t. 28  $\delta$ .

*Alces*, Cæsar, *Bell. Gall.* vi. c. 27; Gesner, *Quad.* i. fig. 2. fig.; Jonston, *Quad.* 92. t. 30, 31.

*Alce*, Plin. *Hist. Nat.* viii. c. 15; Heinsii *Dissert. de Alce*, 1767. *Hab.* The Northern Regions of America and Europe.

Female, adult. N. Europe. Presented by the Earl of Derby.

Head, stuffed, with horns. Russia. Presented by Edward Cayley, Esq.

## OSTEOLOGY.

*Elan*, Daub. *Buff. H. N.* xii. t. 8, 9; Cuvier, *Oss. Foss.* iv. 64. t. 4. f. 22-29, t. 6. f. 8, t. 5. f. 49,  $\frac{1}{2}$ th.

*Moose Deer*, Dale, *Phil. Trans.* n. 444. 384. fig.

*C. alces*, Schreb. *Saugth.* t. 246. f. b.

Horns. Sweden. Presented by the College of Surgeons. From the Leverian Museum. Fig. *Shaw, Mus. Lev.* t. 8.

Skeletons of male and female. From the Zoological Society's Collection.

Two skulls. From the Zoological Society's Collection.

Several pair of horns.

Two single horns of young.

Single horn. Udoholm, Sweden. Presented by the Earl of Selkirk.

#### ICON.

American Moose Deer, drawing of horns in India ink, by S. Parkinson.—*Bank. Icon. ined. B. M. Mammalia*, t.

Several naturalists, especially Colonel Hamilton Smith, thought they had observed a difference in the horns of the Russian and American Elks; I have compared numerous specimens from both countries, but can discover no appreciable distinction between them.

The Elks, like most of the other Deer, and especially of the animals which inhabit the cold and mountain regions, present a very considerable difference in size, according to the scarcity or abundance of the food which the locality they inhabit affords; and the development of the horns appears to be greatly influenced by this cause, so that the horns of the animal inhabiting the more barren districts are much less developed than those found in more fertile situations, and I think I have observed this to be the case with both the Russian and the American horns; but on this head naturalists are likely to be much misled, as the horns which are imported are generally chosen for their size and perfect development, and the small and less-developed specimens are only to be observed in the cargoes of horns which are imported for economic purposes.

These observations are equally applicable to the *Rein Deer*.

2. Rangerine Deer or Reins. *Horns with a large, basal, anterior branch on the crown. Muzzle entirely hairy, without any naked muffle.*

The Rangerine Deer, *Gray, Ann. & Mag. N. H.* 1850; *Knowsley Menag.*

*Cataglochis*, sp., *Bravard.*

*Rangiferinidæ*, *J. Brookes, Mus. Cat.* 61, 1828.

#### 1. TARANDUS.

The muzzle is entirely covered with hair. Crumen small, co-

vered with a pencil of hairs. The fur brittle, in summer short, in winter longer, whiter; of the throat longest. The hoofs are broad, depressed, and bent in at the tip. The external metatarsal gland above the middle of the leg. Horns in both sexes, elongate, subcylindrical, with the basal branches and tip dilated and palmated; of the females smaller. Skull with rather large nose-cavity, at least half as long as the distance to the first grinder; the intermaxillary moderate, nearly reaching to the nasal; a small, very shallow suborbital pit; a very large, oblong, deep fissure. They live in the arctic regions in both hemispheres, migrating in flocks, and eating lichens.

*Cervus* § 2. *Rangifer*, *H. Smith* in *G. A. K.* iv. , 1827; in *Fischer*, *Syn.* ii. 612.

*Rangifer*, *Lesson*, *Mamm.* i. 260; *N. Tab. R. A.* 169, 1842; *Gray*, *Last Mamm. B. M.* 181; *Cat. Osteol. B. M.* 69; *Sundevall*, *Pecora*, 64, 113, 131.

*Tarandus*, *Ogilby*, *P. Z. S.* 1836, 134.

*Rennes*, *Blainv. Desm. Mam.* ii. 448, 1822.

#### 1. TARANDUS RANGIFER. The CARIBOU REIN DEER.

Dark brown in summer; grey in winter. Young, brown yellow varied.

*Cervus Tarandus*, *Linn. S. N.* i. 93; *Gmelin*, *S. N.* i. 177; *Amœn. Acad.* iv. 144. t. 1; *Erxl. Syst.* 305; *Retz. Fn. Suec.* i. 42; *Fab. Faun. Grœnl.* 16; *Schreb. Saugth.* 1828, t. 248 A, B, C, D, E; *Desm. N. Dict. H. N.* ii. 521; *Mamm.* 431; *Ency. Méth.* t. 58. f. 3, 4; *F. Cuvier*, *Dict. Sc. Nat.* vii. 463. fig.; *Mam. Lithog.* t.; *Desmoul. Dict. Class. H. N.* iii. 375; *Fischer*, *Syn.* 443. 631; *Pallas*, *Zool. Ross. A.* i. 106; *Eversmann*, *Bull. Soc. Imp. Nat. Mosq.* 1840, 59; *Cuvier*, *Mam. Lithog.* t.; *Bennett*, *Gard. Z. S.* 241. fig.; *Richardson*, *F. Bor. Amer.* 238.

*C. Tarandus sylvestris* (Woodland Caribou), *Rich. F. B. A.* 250.

*Tarandus rangifer*, *Bonap. Index Mamm. Europ.* 35, 1845.

*Cervus rangifer*, *Raii Syn.* 88; *Klein*, *Quad.* 23. t. 1; *Brisson*, *R. A.* 92.

*Capræa Grœnlandica*, *Raii Syn.* 90.

*Cervus Grœnlandicus*, *Brisson*, *Reg. Anim.* 88.

*Cervus platyrhynchos*, *Vrolich*, *Rendier*, t. 2, 1828.

*Cervus coronatus*, *Geoff. MSS. in Schreb. Saugth.* 1135; *Desm. Mamm.* 439; *Fischer*, *Syn.* 613; *H. Smith*, *Griffith A. K.* v. 772; iv. 95. t. . f. 4.

*Rangifer Tarandus*, *Gray*, *List Mamm. B. M.* 181; *Cat. Osteol. B. M.* 69; *Sundevall*, *Pecora*, 54.

*Cervus mirabilis*, *Jonston*, *Quad.* t. 36.

- Cervus palmatus*, *Jonston*, *Quad.* t. 37.  
*Cervus cornibus rectis*, &c., *Caribou*, *Brisson*, *R. A.* 91.  
*Tarandus*, *Plin. Hist. Nat.* viii. c. 34; *Aldrov. Bisulc.* 859. fig. 861; *Scheff. Lapp.* 321. fig. p. 327.  
*Rangifer*, *Germer*, *Quad.* 950. fig.; *Hulden. Util. Rangifer Jena*, 1694.  
*Renthier*, *Strals. Magaz.* i. 394. t. 1; *Wildung, Taschenb. f.* 1805.  
*Renhirsch*, *Mellin, Schrift. Berlin Naturf. Fr.* i. l. t. 2; iv. 128. t. 5.  
*Rendier*, *Camp. Natursk. Verhand.* 193. t. 1.  
*Tarandus borealis*, *Rüppell, Verz. Senck. Samml.* 183, 1845.  
*Tarandus Rangifer*, *T. Spitzbergensis*, *T. Norvegicus*, *T. Groenlandicus*, *T. Sibiricus*, *T. nodosus*, et *T. Canadensis*, *J. Brookes, Mus. Cat.* 61, 1828.  
*Rein Deer*, *Penn. Syn.* 46. 36. t. 8. f. 1; *Quad.* i. 99. t. 10. f. 2; *Knight, M. A. N.* f. 587-590; *Shaw, Zool.* ii. 269. t. 176; *Brooke, Edinb. New Phil. Journ.* 1827, 30.  
*Caribou*, *Sagard. Theodat. Canad.* 751; *Buffon, H. N.* xv. 50. t. 3.  
*Renne*, *Buffon, H. N.* xii. 79. t. 10, 11, 12; *Supp.* iii. t. 18\*.  
*Renn Thier*, *Eversmann, Bull. de Moscou*, 1840, 58.  
*Rhenne*, *Cuvier, R. A.* i. 254; *Oss. Foss.* iv. 61. t. 4. f. 1-18, t. 5. f. 47.  
*Ren*, *Hollstein, K. Svensk. Vet. Handl.* xxxv. 124.  
*Caribou* or *Carrebœuf*, *French Canadians*.  
*Oleen, Russians in Siberia*.  
*Greenland Buck*, *Edwards, Birds*, i. t. 51, young.  
*Hirsch*, *Martin, Spitzb.* 72. t. O. f. 2, young.
- Var. Smaller.* Horns more slender, less palmated. Hair short, smooth, close, brown, with throat and belly white; in summer hair very close, thick, waved, brittle and erect, and white in winter.
- Cervus Tarandus Americanus*, *H. Smith, Griffith A. K.* v. 773?; *Fischer, Syn.* 615?  
*Cervus Tarandus a. Arctica*, *Barren Ground Caribou*, *Richardson, Fauna Bor. Amer.* 241. fig. 240, horns.  
*Common Deer*, *Hearne, Journ.* 195. 208.
1. *Woodland Caribou*, *Richardson*.  
*Caribou des Bois*, *H. Smith, G. A. K.*  
*Tarandus nemoralis*, *Rüppell, Verz. Senck. Samml.* 183, 1845.
  2. *Great Caribou of the Rocky Mountains*, *H. Smith*.
  3. *Labrador or Polar Caribou*, *H. Smith*.
  4. *Siberian Rein Deer* (ridden by the *Tungusians*).

## 5. Newfoundland Caribou.

*Hab.* Arctic Circle, America and Europe.

Male, horns half grown. North Europe. Presented by the Earl of Derby.

Fœtus, in spirit. Greenland. From Dr. Møller's Collection.

Adult, white (no skull nor horns). Presented by the Earl of Derby.

Adult male, dark brown. Hudson's Bay. Presented by the Hudson's Bay Company.

Male, nearly white. Hudson's Bay. Presented by the Hudson's Bay Company.

Female, dark brown. Hudson's Bay. Presented by the Hudson's Bay Company.

Female, nearly white. Hudson's Bay. Presented by the Hudson's Bay Company.

Two, very young. Hudson's Bay. Presented by the Hudson's Bay Company.

Female, dark brown. Sweden. Presented by Sir T. Wilson.

Young. Bred at Charlton. Presented by Sir T. Wilson.

Young. Bred at the Zoological Gardens.

## OSTEOLOGY.

Renne, *Daub. Buff. H. N.* xii. t. 10, 11, 12; *Cuvier, Oss. Foss.* iv. 61. t. 4. f. 1-18, t. 5. f. 47, skull  $\frac{1}{2}$ .

C. Tarandus, *Schreb. Saugh.* t. 248 A, C, D.

C. rangifera, *Klein, Quad.* t. 1. fig.

Skeleton. Norway. Presented by Sir T. M. Wilson, Bart.

a. Skull, large; horns small, slender branches small subulate, middle branch largest.

b. Skull and horns large, long, slender (*Cuv. Oss. Foss.* t. 4. f. 20); no basal branch to right horn.

c. Skull and horns; horns large, long, slender, apex broad, branched behind, no basal branch to right horn.

d. Horns, middle-sized, the lower branch of left elongate, forked; of right horn very broad, palmated. North America. Presented by Captain Sir John Franklin, R.N.

e. Horns, small; the lower and middle branch of right horn confluent, palmated. North America. Presented by Captain Sir John Franklin, R.N.

f. Horns, large (*Cuv. Oss. Foss.* t. 4. f. 17); basal branch of left horn large, palmated; of right smaller, lobed.

g. Horns, large (*Cuv. Oss. Foss.* t. 4. f. 9); basal branch of left horn very large, palmated; of right simple, subulate. Siberia?

h. Horns, long, elongated, slender, erect; lower branches elongate, lobed, top broad, lobed.

i. Horn, middle-sized (*Cuv. Oss. Foss. t. 4. f. 8*); lower branch of left horn simple; of right broad, palmated. North America. Presented by Captain Sir John Franklin, R.N.

j. Horns, large, long, slender, upper back branches recurved. North America. Presented by Captain Sir John Franklin, R.N.

k. Horns, large, long, slender (*Cuv. Oss. Foss. t. 4. f. 13*). Presented by Captain Sir John Franklin, R.N.

l. Horns, very small, basal branch subulate, upper and medial branch bifid.

m. Horns, large, with the basal branch of each horn dilated, palmated (*Cuv. Oss. Foss. t. 4. f. 17*). From Mr. Brookes's Museum.

n. Horns of the year (*Cuv. Oss. Foss. t. 4. f. 1*). Knowsley. Presented by the Earl of Derby.

Horns of the year.

Horns, very large, with the head stuffed. Newfoundland.

Five pairs of horns. N.W. Coast of America. Presented by Lieut. Wood and Capt. Kellett, R.N.

Varies exceedingly in size. In the British Museum there are specimens varying from 41 to 50 inches high at the withers.

Dr. Richardson observes, "There are two well-marked and permanent varieties of *Caribou* that inhabit the fur countries: one of them (*Woodland Caribou*) confined to the woody and more southern district; and the other (*Barren Ground Caribou*) retiring to the woods only in the winter, but passing the summer on the coast of the Arctic Seas, or on the Barren Grounds so often mentioned in this work."—*Faun. Bor. Amer.* 299.

The large Siberian variety is ridden on by the Tungusians; they also use them for draught, as the Laplanders do the smaller variety.

They have a large variety in Newfoundland nearly as large as an heifer. They have very large and heavy horns. There are some horns of this variety in the British Museum. Dr. Middendorf informed me that the horns of the large Siberian variety were as large and greatly resembled the horns from Newfoundland (Nova Scotia) in the Museum Collection.

Pallas observes, "*Americæ forte continua, gregatim verno tempore per glacies admigrant, paulo diversi a Siberiæ inquilinis et verosimillime Americani.*"—*Zool. Ross. Asiat.* i. 208.

In winter the hair of the Rein Deer is long, thick, grey-brown; neck, rump, belly, ring round the hoof, and end of nose, white. In summer the same animal has short, dark sooty-brown hair, with the parts which are white in winter being rather paler grey-brown.

- II. The Deer of the Temperate or Warm Regions. *Muzzle tapering, ending in a bald, moist muffle. Fawn (and sometimes the adult) spotted. Skull with a moderate nose-hole. Intermaxillaries reaching to the nasal. Tail well developed. Crumen and suborbital pit in skull distinct. The spots of the young generally disappear in the adult, or are only to be seen when the animals are in high condition. The fur is shorter and brighter in summer, and greyer in winter.*

Deer of Temperate and Warm Regions, Gray, *Ann. & Mag. N. H.* 1850; *Knowsley Menag.*  
*Cervus*, Sundevall, *Pecora*, 54.

3. The Elaphine Deer. *Horns with a distinct anterior basal snag close on the crown. Muffle broad, shallow, separated from the upper lip by a hairy band, with only a narrow interruption in front. External metatarsal gland above the middle of the bone. Skull with a large, deep suborbital pit.*

Elaphine Deer, Gray, *Ann. & Mag. N. H.* 1850; *Knows. Menag.*  
*Cataglochia* (part.), *Bravard, Foss. du Dome.*

*Cervus* § 1. (*C. Veteris orbis*), Sundevall, *Pecora*, 54.

Elaphidæ, J. Brookes, *Mus. Cat.* 61, 1828.

### 1. CERVUS.

Horns round, erect, with an anterior basal snag, a medial anterior snag, with the apex divided into one or more branches, according to the age of the animal. Crumen well-developed. Hoofs narrow, triangular, compressed, covered with brittle, opaque hair. The rump is generally ornamented with a pale mark. Skull with a large, deep suborbital pit. Horns with one or two branches on the middle of the front of the beam.

*Cervus* (§ 4. *Elaphus*), H. Smith, *Griffith A. K. v.* . 1827; in *Fischer, Syn.* 612; *Lesson, Mamm. i.* 262; *N: Tab. R. A.* 169.

*Cervus* (*Elaphus*), *Ogilby, P. Z. S.* 1836, 135.

*Cervus* § 1. a. (*C. nobilis*), Sundevall, *Pecora*, 55.

*Cerfs*, *Blainv. Desm. Mamm. ii.* 448, 1822.

*Elaphus*, J. Brookes, *Cat. Mus.* 61.

a. Hoofs rather broad, semicircular. Tail very short. Hair in winter soft. America. **STRONGYLOCEROS.**

### 1. CERVUS CANADENSIS. The WAPITI.

Red brown. Rump with a very large, pale disk extending far above the base of the tail, and with a black streak on each side

of it. *Male with hair of throat elongated, black, with reddish tips.*

Stag, *Dale, Phil. Trans.* n. 444. 384.

Cerf de Canada, *Perr. Anim.* ii. 55. t. 45? (no rump disk); *Cuvier, R. A.* i. 256; *Oss. Foss.* iv. 26. t. 3. f. 13-22.

*Cervus Canadensis*, *Brisson, R. A.* 88; *Schreb. Saugh.* 990. t. 246; *Gray, List Mamm. B. M.* 177; *Cat. Osteol. B. M.* 65; *Desm. Nouv. D. H. N.* v. 546; *Mam.* 433; *Ency. Méth.* t. 58. f. 2; *F. Cuv. Dict. Sc. Nat.* vii.; *Desmoul. Dict. Class. H. N.* iii. 377; *Fischer, Syn.* 442.

*Elaphus Canadensis*, *J. Brookes, Cat. Mus.* 62.

*Cervus Elaphus* var. *Canadensis*, *Erxl. Syst.* 305; *Gmelin, S. N.* i. 176.

*Cervus Strongyloceros*, *Schreb.* t. 247; *Rich. Faun. Bor. Amer.* 251; *Sundevall, Pecora*, 55.

C. Major, *Ord in Desm. Mam.* 432.

*Cervus Wapiti*, *Leach, Journ. Phys.* lxxxv. 66; *Mitchell, Mam. N. York*; *Barton, Journ.* ii. *Supp.* 36; *F. Cuvier, Mam. Lithog.* t.; *Desmoul. Dict. Class. H. N.* iii. 377; *Blyth, J. Asiat. Soc. Beng.* x. 750. t. f. 1-6, horns.

American Elk, *Bewick, Quad.*

North-western Stag, *C. occidentalis*, *H. Smith, G. A. K.* iv. 101. t. f. 2, horn; *Fischer, Syn. Mam.* 614, not *Syn.*

Wapiti, *Warden, Etats Unis*, v. 638; *Wied, Voy. Amer. Sept.* iii. 302; *Knight, Mus. A. N.* f. 607, 611, 580.

Stag of Carolina, *Lawson, Carol.* 123.

Stag of America, *Catesby, Carol. App.* 28.

Alces Amer. corn. teretibus, *Jeffers. Notes Virginia*, 57, 1788.

*Var.?* Smaller.

Red Deer (or Canadian Stag), *Warden, Etats Unis*, v. 637.

Elk, *Lewis & Clerk.*

Stag, *Penn. Act. Zool.* i. 27.

Wewaskiss, *Hearne, Journ.* 360.

*Hab.* North America.

Young. N. America. Born at the Surrey Zoological Gardens.

Male, adult. N. America. Born at Windsor Park. Presented by Edward Cross, Esq.

#### OSTEOLOGY.

Cerf du Canada, *Daub. Buffon H. N.* vi. t. 26; *Cuvier, Oss. Foss.* iv. t. 3. f. 13, 17-20, 22.

Cerf, *Perrault, Anim.* ii. 65. f. 45.

*C. strongyloceros*, *Schreb. Saugh.* t. 247 g.

Horns, large. St. Diego. California. Presented by C. Pentland, Esq.



Horns, long, two lower branches near together. North America.

Horns, small, two lower branches rather near. North America.

Horns, large, beams without the upper frontal branches, the tip of right horn subpalmate (perhaps a different species).

The *American Elk* still exists on the upper branches of the Susquehanna River, and thence westward may occasionally be found in all favourable situations to the Pacific Ocean. Those observed on the mountains south of the Columbia River were of unusual size.—*Peale*.

*Var.* Smaller.

*Hab.* Plains of California and the upper parts of the Missouri River, in large herds.

The *Elks* in California are very abundant; they are not generally so large as those inhabiting the mountain districts, but we can find no specific character to separate one from the other.—*Peale*.

*b.* Hoofs narrow, triangular. Tail moderate. Covered with harsh hair. Western World. CERVUS.

## 2. CERVUS ELAPHUS. The STAG.

Brown. Rump with a pale spot extending rather above the upper surface of the base of the tail.

*Cervus Elaphus*, Linn. S. N. i. 93; Gmelin, S. N. i. 176; *Erzl. Syst.* 301; Schreb. *Saugth.* 996. t. 247 A, B, C, D, E; *Desm. Mam.* 434; *Ency. Méth.* t. 57. f. 3, 4; *F. Cuvier, Mam. Lithog.* t.; *Blyth, J. Asiat. Soc. Beng.* x. 750. t. f. 10, 11 (12?); *Sundevall, Pecora*, 55; *Gray, List Mamm. B. M.* 177; *Cat. Osteol. B. M.* 65; *Knowsley Menag.*; *Proc. Zool. Soc.* 1850.

*Cervus vulgaris*, Linn. *Mus. Ad. Frid.* i. 11.

*Elaphus communis*, J. Brookes, *Cat. Mus.* 61, 1828.

*Cervus nobilis*, Klein, *Quad.* 23.

*Cervus*, *Plinii Hist. Nat.* viii. c. 32; *Gesner, Quad.* 354. fig.; *Agricola, des Hirchen*, &c. 1603; *Aldrov. Bisulc.* 769. fig. 774; *Grabæ Elaphographiæ*, 1667; *Hill, Animal.* 577. t. 28; *Brisson, R. A.* 86.

\**Ελαφος*, *Aristot. Hist. Anim.* ii. c. 7. n. 37; *Ælian, Anim.* vi. c. 11, 15; *Oppian, Cynege.* ii. 176.

Stag or Red Deer, *Penn. Brit. Zool.* i. 34; *Syn.* 49; *Quad.* i. 114; *Shaw, Zool.* ii. 276. t. 117.

Biche, *Buffon, H. N.* vi. t. 10.

Faon du Cerf, *Buffon, H. N.* vi. t. 12.

Cerf, *Buffon, H. N.* vi. 65. t. 9.

*Cerv commun*, *Cuvier*, *R. A.* i. 255; *Oss. Foss.* iv. 24. t. 3. f. 1-12; *F. Cuv. Mam. Lith.* t.

*Hirsch*, *Riding, Jagdb. Th.* t. 4, 5; *Meyer, Thiere*, i. t. 22; *Wildunger, Taschenb.* 1794, i. t. 1. f. 2, 3; *Schrank, Faun. Boic.* i. 41.

*Rothhirsch*, *Beckstein, Naturg. Deutschl.* 453.

*Cervus Elephas Hippelaphus*, *Erzl. Syst.* 304; *Fischer, Syn.* 447 (Old male. Neck rather maned).

*C. Elaphus*  $\beta$ , *Gmelin, S. N.* i. 176.

*Cervus Germanicus*, *Brisson, R. A.* 87.

*Tragelaphus*, *Gesner, Quad.* 296 c. fig.

*Hippelaphus*, *Jonston, Quad.* t. 35.

*Brandhirsch*, *Gesner, Thier.* 119. fig.

*Pferdhirsch*, *Gesner, Thier.* 210. fig.

*Cerv d'Ardenne*, *French Authors.*

*Hab.* Europe.

Male (not good state). Knowsley. Presented by the Earl of Derby.

Adult female. France.

Fawn. France.

#### OSTEOLOGY.

*Cerv*, *Buffon, H. N.* vi. t. 13, 14, 18-25; *Cuvier, Oss. Foss.* iv. t. 2. f. 11-20, t. 3. f. 1-12.

Horns, with two frontal antlers. England.

Horns; left divided into four long cylindrical branches; right with two frontal antlers, tip subpalmate; perhaps of *C. Canadensis*?

Horns, deformed. Germany.

Horns, deformed. Germany.

Horns, with a third horn on the right side. Germany.

Single horns, apex much branched.\* Germany.

Single horn, adult. Germany.

Single horn, adult. Germany.

Single horn, deformed, with only three branches. Germany.

Single horn, simple, compressed, notched at the tip. Germany.

Single deformed stunted horn. Germany.

Skull and horns. Presented by the Earl of Derby.

Skeleton. From the Zoological Society's Collection.

Two pairs of horns. From Mr. Leadbeater's Collection.

Horns. From a bog. Presented by Jabez Allies, Esq.

Horns. From Mr. Argent's Collection.

*Var.?* Hungarian Stag, *Blyth, Journ. Asiat. Soc. Bengal*, 1841, 750. t. . f. 11, horns.

*Var.?* Horns very large, larger than those of the *Wapiti*.

*Hab.* Assyrian Mountains; Lord Arthur Hay.

*Var.?* Half-fed specimens.

*Cerf de Corse*, *Buffon*, *H. N.* vi. 95. t. 11; *Cuvier*, *Oss. Foss.* iv. 53.

*Cervus Elaphus Corsicanus*, *Erzl.*, from *Buffon*.

*Elaphus Corsicanus*, *J. Brookes*, *Cat. Mus.* 61.

*Cervus Mediterraneus*, "*Blainv.*"; *Pucheran*, *Comptes Rendus*, 1849, 779.

*Cervus Corsicus*, *Bonaparte*; *Gervais*.

*Hab.* Corsica.

*Buffon* observes, of the *Cerf de Corse*, which has been regarded as a variety to be distinguished by the smallness of its size, that he "believes the size to depend on the scarcity of nourishment; for when moved to better pastures, in four years they become higher, larger, and stouter than the Common Stag."—*Buffon*, *Hist. Nat.* vi. 95.

*Var. Algeria.* Caudal disc to base of the tail pale brown. Horns large.

*Cerf commune d'Algerie*, *Geoffroy in Jardin des Plantes*, *Paris*, 1851.

*Hab.* Algeria. Living in Garden of Plants, Paris.

### 3. CERVUS BARBARUS. The BARBARY DEER.

Dark brown, obscurely white spotted, with a very indistinct, greyish brown, broad dorsal line; with a pale yellow spot extended considerably above the base of the tail. Back of haunches white, with a dark stripe on each side.

*Cervus Barbarus*, *Bennett*, *Catal. Gardens Zool. Soc.*

Bush Goat (Al Wassai), *Moors*, see *Griffith A. K.* v. 775; *Frazer*, *Zool. Typica*, t.; *Gray*, *Knowsley Menag.*; *Proc. Zool. Soc.* 1850.

*Hab.* Coast of Barbary; Tunis.

### OSTEOLOGY.

Horns (of animal in *Zool. Soc. Gardens*). Tunis.

Chiefly distinguished from the common Stag, or the Algerian variety of it, by its smaller size, stouter form, and more permanently spotted fur.

### 4. CERVUS WALLICHII. The BARA SINGA OF MORL.

Brown, with a very large white spot on the rump, extending on back of the haunches, and far above the base of the tail. The horns with two basal and one or two apical branches.

*Cervus Pygargus*, Hard. Linn. Trans., not Pallas.

Barah Singha, Waller, *Asiat. Res.* xvii. 499.

*Cervus Wallichii*, Cuvier, *Oss. Foss.* iv. 50; *F. Cuv. Mam. Lithog.*, from Hardw. *Icon. in B. M.*; Sundevall, *Pecora*, 55; H. Smith, *G. A. K.* iv. 103. t. 166, v. 788 (from Indian drawing); Ogilby in *Royle's Himal.* i. 73.

Jaareal Stag, Blyth, *Journ. Asiat. Soc. Beng.* 1841, 750. t. f. 7, young horn, f. 8, 9, horns adult.

*Pseudocervus Wallichii*, Hodgson, *J. A. S. B.* x. 914, xi. 284; Gray, *List Mamm. B. M.* 180.

*Cervus Wallichii*, or the Gyana, Hodgson, *Icon. Mamm. ined.* 198.

*Cervus*, n. s., Falconer, *Journ. Asiat. Soc.* iv. 710; Ogilby in *Royle's Himal.* 73.

?*Cervus Casperianus*, or Hangool, Falconer, *MSS.*; Gray, *Cat. Osteol. Sp. B. M.* 147.

?*Cervus Cashmerensis*, Gray, *Cat. Osteol. Sp. B. M.* 65.

Kashmir Stag?, Blyth, *Proc. Zool. Soc.* 1848, 72; *J. Asiat. Soc. Bengal*, 1841, 750. t. f. 8, 9.

Persian Deer, Maral, or Gevezu, or Gookoohee, MacNeil, *Proc. Zool. Soc.* 1840, 11; Blyth, *Journ. Asiat. Soc. Beng.* 1841, 750. t. f. 10.

*Hab.* Cachir, Hodgson; Persia, MacNeil.

The skull of Dr. Falconer's *Cashmeer Stag* is 15 inches long; the suborbital pit is oblong, triangular, and rather deep; the skull and horns are very like Mr. Hodgson's specimen of *Cervus affinis*, but considerably smaller.

Sir John MacNeil informs us, they are called by the Persians *Marāl*, or *Gevezu*, or *Gookoohee*, and are frequently noticed in their literature. They are found in all the wooded mountain districts of Persia, but apparently do not occur in the central parts of the country, and rarely descend into the plains. During the summer they are found in the highest wooded parts of the mountains, and during the winter in the lower ravines near their bases, where they are frequently tracked in the snow.

The horns of the adult males closely resemble those of the Red Deer of this country, insomuch that I doubt whether an unscientific observer could distinguish them, except by the superior size of those of the *Marāl*.—*P. Z. S.* 11.

Lesson confounds *C. Wallichii* and *C. Duvaucellii* as the same species.—*Nouv. Tab. R. A.* 171, 1842.

Flat skin. Nepal. Presented by Gen. Thomas Hardwicke.

Hunter's skin. Nepal. Presented by Gen. Thomas Hardwicke.

"The Nepal Deer, *Cervus* —, Hardw. *MSS.*"—Gray, *List Mamm. B. M.* 180.

## OSTEOLOGY.

*Cervus Cashmerensis*, (*Falconer. MSS.*); *Gray, Osteol. Cat. B. M.* 65.

*Cervus Casperianus*, *Falconer, MSS.*; *Gray, Osteol. Cat. B. M.* 147.

Skull and horns of male. Cashmere. Presented by H. Falconer, M.D.

Skull of female. Cashmere. Presented by H. Falconer, M.D.

## ICON.

Jerrael or Tailless Deer of Nepal, *Hardw. Icon. ined. B. M.* n. 10,975. t. 128.

The Red Deer of India, *Hardw. Icon. ined. B. M.* n. 10,975. t. 143, copied by Colonel Hamilton Smith, and called by him *C. Hardwickii*.

## 5. CERVUS AFFINIS. The SAUL FOREST STAG.

Pale brown. —? Horns very large, as large and heavy as those of the *Wapiti*.

*Cervus affinis* (Mool Barasingha or Royal Stag of the Morung), *Hodgson, Journ. Asiat. Soc. Beng.* 1841, x. 721. t. f. 1. 914; *Calcutta Journ. Nat. Hist.* iv. 291; *Icon. ined. Brit. Mus.* n. 197; *Proc. Zool. Soc.* 1840, 79; *Sundevall, Pecora*, 131.

*Cervus* (*Wallichii*?) *affinis*, *Gray, Cat. Osteol. Sp. B. M.* 65.

Shoa or Tibetan Stag (*Cervus affinis*), *Hodgson, Journ. Asiat. Soc. Beng.* 1850, 518. t.

*Cervus Tibetanus*, *Hodgson, Journ. Asiat. Soc. Beng.* 1850, 466. t., horns.

*Cervus Elaphus*, *Hodgson, J. A. S. Beng.* iv. 1835, 648. t. 53. f. 3; x. 914.

*Cervus Wallichii*, part., *Gray, Cat. Hodgson Coll. B. M.* 32.

*Cervus Wallichii* var., *Blyth, Journ. Asiat. Soc. Beng.* 1841, 747. Bara Singha, *Hindoos*; *Hodgson*.

Barah Singa or var. of Stag, *Hodgson, J. A. S. B.* i. 346.

*Hab.* Tibet in Dingham; *Hodgson*.

## ANAT.

Pair of horns, very large size. Nepal. Presented by B. H. Hodgson, Esq.

## ICON.

Drawing of a male.—*Hodgson, Icon. ined. B. M.* t. 197. Presented by B. H. Hodgson, Esq.

Drawing of male.—*Hodgson, Icon. ined. B. M.* t. 198. Presented by B. H. Hodgson, Esq.

Drawing of horns.—*Hodgson, Icon. ined. B. M.* t. 212. f. 11. Presented by B. H. Hodgson, Esq.

The Indian species of *Cervus* are confined to the vast primitive forests in the plains. Tail very short; a large disc or pale space round the tail, and no proper mane.—*Hodgson*.

Mr. Hodgson, in his figure of *C. affinis*, does not represent the pale space round the tail, but it is evident by this observation that it is present. Probably *C. Wallichii*, *C. Caspерианus*, *C. affinis* and *C. Tibetanus*, are only one species.

Mr. Hodgson observes, "The horns of *C. affinis*, which I received from the *Morung* or Eastern Taria, most probably were brought from Thibet."—*Journ. Asiat. Soc. Beng.* 1850, 466.

The latter observation induces me to place all the above synonymy to one species.

## 6. CERVUS SIKA. The SIKA.

Dark brown. Cheeks and throat rather paler. Rump brown, without any pale spot. Tail pale, white beneath. Hair harsh. Horns rather slender, with a basal and medial snag, and a sub-apical internal one.

*Cervus Sika*, *Schlegel, Fauna Japon.* t. 17; *Sundevall, Pecora*, 131.

*C. Sitza*, *Temm. Mus. Leyden*.

*Cervus* (*Hippelaphi*, no. 4), *Sundevall, Pecora*, 55.

*Hab.* Japan. *Mus. Leyden*.

OSTEOLOGY. *Schlegel, Fauna Japon.* t. 17, skull and horns.

## 2. DAMA, H. Smith.

Horns round below, expanded above, smooth, and branched on the hinder edge. Tail rather elongated. Crumen well-developed. Hoofs narrow, triangular, compressed, covered with thin, rather adpressed hairs, reversed on the nape. The fur is spotted in summer. The skull with a short, broad face, an oblong, rather shallow, infraorbital pit, and short, broad nasals.

*Dama*, *Gray, Med. Repos.* 1821, 4; *Proc. Zool. Soc.* 1850, not *Bennett*; *J. Brooke, Cat. Mus.* 62, 1828.

*Cervus*, § *Dama*, *H. Smith, Griffith A. K.* v. 182; *Lesson, Mamm.* i. 261; *N. Tab. R. A.* 169; *Sundevall, Pecora*, 58.

*Daims*, *Blainville, Desm. Mam.* ii. 448, 1822.

*Platycterinidæ*, *J. Brookes, Mus. Cat.* 61, 1828.

*Tarandus*, sp., *Rüppell, Verz.* 183.

## 1. DAMA VULGARIS. The FALLOW DEER.

Fulvous. White spotted, a longitudinal line on the lower part of the side, and a line across the haunches, white.

*Var.* Nearly black to nearly pure white.

*Platyceros*, *Pliny*.

*Cervus platyceros*, *Raii Quad.* 85.

*Cervus dama*, *Linn. S. N. i.* 93; *Sundevall, Pecora*, 58; *Schreb. Saugh. t.* 249 A, B.

*Dama vulgaris*, *Gesner, Quad.* 335. f. 1; *J. Brookes, Cat. Mus.* 62; *Gray, List Mamm. B. M.* 181; *Cat. Osteol. Spec. B. M.* 65; *Knowsley Menag.*; *Proc. Zool. Soc.* 1850; *Bonap. Fauna Ital. t.*

*Dama platyceros*, *Bonap. Index Mamm. Europ.* 35, 1845.

*Tarandus Dama*, *Rüppell, Verz. Senck. Samml.* 183, 1845.

Fallow Deer and Buck, *Pennant*; *Knight, Mus. A. N. f.* 581, 597, 599.

*Daim et Daime*, *Buffon, Hist. Nat. vi.*

*Daim fauve*, *F. Cuvier, Hist. N. vi.* 167. f. 27, 28.

*Dama maculata*, *J. Brookes, Cat. Mus.* 61, 1828.

*Cervus coronatus*, *H. Smith, G. A. K. iv. t.* . f. 4, from monstrosous horns.

*Var. Blackish.*

*Cervus mauricus*, *Blainv. Bull. Soc. Phil. i.* 1816, 72.

*C. Dama maura*, *Fischer, Syn. Mam.* 448.

*Daime noire*, *F. Cuv. Mam. Lithog. t.*

*Hab. Persia.* Domesticated in Europe.

This species is represented in sculpture from Nineveh. See *Vaux, Nineveh*, fig. at p. 233; *Bonomi, Nineveh*, p.

Young.

Head and horns, dark variety.

*Cervus mauricus*, *F. Cuv. Mam. Lithog. t.*

Adult male in winter. Italy.

Young female in winter. France.

#### OSTEOLOGY.

*Daim*, *Daub. Buffon H. N. vi. t.* 29-31; *Cuvier, Oss. Foss. iv.* 29. t. 5. f. 23-31, 32-35; *Mellin, Berlin Naturf. ii. t.* 6, 7.

Horns.

Horns, a distorted variety.

Horns, adult.

Horns, adult, a distorted variety.

Horns, adult.

Horns, adult.

4. The Rusine Deer or Samboo. *Horns subcylindrical, with a distinct, anterior basal branch close on the burr or crown, without any medial branch, and with a rather elongated peduncle. Muffle large, high, not separated from the upper lip*

by a hairy band. External metatarsal gland above the middle of the bone. Ears broad, short. Skull with a very deep suborbital pit. Fur hard, rather shining. No pale mark on rump. South-eastern Asia and its islands.

Rusine Deer, Gray, *Ann. & Mag. N. H.* 1850; *Knows. Menag.*; *Proc. Zool. Soc.* 1850.

Cataglochia, part., Bravard.

Cervus  $\beta$ . Hippelaphi, Sundevall, *Pecora*, 55.

Prox, Sundevall, *Pecora*, 57.

Rusadæ et Axidæ, J. Brookes, *Mus. Cat.* 62, 1828.

Dr. Sundevall observes, "The young of the typical *Rusæ* are not spotted."—*Pecora*, 130. But according to the observations and figures of Mr. Hodgson and other Indian zoologists, they are pale spotted, but not so distinctly as several other genera of Deer. Some few specimens retain the spots through life.

\* The upper part of the horns variously branched.

#### 1. PANOLIA, Gray.

Horns round, curved backwards and outwards, with a large anterior basal snag close on the burr, the upper part bent in, forked, becoming rather expanded, and branched on the inner or hinder edge. The fur formed of rather rigid, flattened hair. Muffle large. Skull with a narrow face, a large, oblong, very deep suborbital pit, and the nasals short, broad, and dilated behind. The frontal snag of the horns often has a tubercle or branch at the base.

Panolia, Gray, *List Mamm. B. M.* xxvii.; *Knowsley Menag.*; *Proc. Zool. Soc.* 1850.

#### 1. PANOLIA ELDII. The SUNGNAI.

Nondescript Deer, P. Eld, *Calcutta Journ. Nat. Hist.* ii. 1842, 415. t. 12.

Panolia acuticornis, Gray, *List Mamm. B. M.* 180.

Panolia platyceros, Gray, *List Mamm. B. M.* 181, adult; *Cat. Osteol. B. M.* 66.

Cervus (Rusa) frontalis, McClelland, *Calcutta Journ. N. H.* i. t. 12. f. 1, ii. 539; Sundevall, *Pecora*, 132.

Cervus Eldii —?, *Calcutta Journ. N. Hist.* ii. 417, 1842.

Panolia Eldii (The Sungnai), Gray, *Cat. Hodgson Coll. B. M.* 34; *Osteol. B. M.* 66; *Knowsley Menag.* (P. Eedii, misprint).

Cervus lyratus, Schinz, *Syn. Mam.* ii. 395.

Cervus Smithii, Gray, *Proc. Zool. Soc.* 1837, 45?  
*Hab. India.*



## ANAT.

Horns on frontal bone. India.

*Panolia acuticornis*, Gray, *Cat. Mamm. B. M.* 180.

A large pair of horns, cylindrical, and with two small snags near the tip. India. Presented by B. H. Hodgson, Esq.

*Panolia Eedii*, Gray, *List Mamm. B. M.* 181; *Cat. Osteol. B. M.* 66 (misprint for *P. Eldii*).

A smaller pair of horns, rather compressed, and with one large and two short snags near the tip. India. Presented by B. H. Hodgson, Esq.

Skull and horns, with one large and one small snag near the tip. India.

Skull and horns, with one large and two small snags near the tip. India.

Skull and horns, with one small snag near the tip. India.

Horn. India.

*Panolia platyceros*, Gray, *List Mamm. B. M.* 181.

*Cervus*, n. s., Gray, *Proc. Zool. Soc.* 1837, 45; *Calcut. Journ. N. H.* 1842, t. 12. f.

Horns. India. From Mr. Warwick's Collection.

## ICON.

?Bara Singha.—*Hardw. Icon. ined. B. M.* n. 10,975. t. 130, the original, copied and altered by Colonel Hamilton Smith, t. 131. The *C. Smithii* of Gray, *P. Z. Soc.* 1837, 48. It may be only a bad figure of *C. Duvaucellii*.

## 2. RUCERVUS, Hodgson.

Horns cylindrical, with an anterior basal branch, and repeatedly forked at the tip. Muffle large, high, continued to the edge of the upper lip below. Tail rather short, thick. Face shortish. Crumen well-developed. Ears broad, rounded, covered with hair. Hoofs narrow, compressed. The fur is formed of rather soft, adpressed hairs, without any pale mark on the rump, and only slightly spotted. Skull with an elongate face, a large nose-opening, and an oblong, rather shallow, suborbital pit.

*Rucervus*, Hodgson, *Journ. Asiat. Soc. Beng.* 1850, 5.

*Recervus*, Gray, *Cat. Osteol. Spec.*; *Cat. Hodgson Coll. B. M.*; *Knowsley Menag.*; *Proc. Zool. Soc.* 1850.

*Elaphus*, sp., Lesson, *Mamm.* i. 263.

*Cervus*, § *Hippelaphus*, sp., Sundevall, *Pecora*, 55.

## 1. RUCERVUS DUVAUCELLII. The BAHRAINGA.

Yellowish brown, without any rump spot. Dorsal streak indistinct, dark, with a row of white spots on each side; sides not

spotted. Hair black, with yellow tips. Neck with rather longer hair. Throat, chest and belly with longer, scattered, greyish white hairs. Muzzle and front of legs dark. Chin white. *Winter*: Brown; tips of hair yellowish. Crown yellow. Dorsal line blackish, narrow. Muzzle black; chin white.

*Cervus Duvaucellii*, *Cuvier*, *Oss. Foss.* iv. t. 29. f. 6-8; *Griffith*, *A. K.* iv. 116, *note*; *Journ. Asiat. Soc. Beng.* 1836, 240. t. 66-68; *Ogilby in Royle's Himal.* 72.

*Rucervus Duvaucellii*, *Gray*, *Cat. Hodgson Coll. B. M.* 33; *Cat. Osteol. B. M.* 65.

*Rucervus Duvaucelli*, *Gray*, *Proc. Zool. Soc.* 1850.

*Rucervus Elaphoides*, *Hodgson*, *Journ. Asiat. Soc. Beng.* iv. 1835, 648. t. 53. f. 4; x. 914; *Proc. Zool. Soc.* 1836, 47; *Calcutta Journ. N. H.* iv. 292.

*Cervus Bahrainga*, *Hodgson*, *P. Z. S.* 1834, 99.

*Cervus enclodocerus*, *Hodgson*.

*Cervus Bahraiya*, *Hodgson*, *P. Z. S.* 1836, 46.

*Axis?* *Duvaucellii*, *Gray*, *List Mamm. B. M.* 178.

*Cervus Euryceros*, *Gray*, *Knowsley Menag. t.*

*Cervus Elaphoides*, *Hodgson*, *Journ. Asiat. S. Beng.* 1835, 648. t. 78.

*The Bahraiya*, *Hodgson*, *J. A. S. Beng.* i. 345.

*Cervus Wallichii*, *part.*, *Lesson*, *Nov. Tab. R. A.* 171, 1842.

*Hab.* India; Nepal.

An imperfect skin. Nepal. Presented by B. H. Hodgson, Esq.

Male. India; Nepal. From Gardens of Zoological Society.

**OSTEOLOGY.** *Cuvier*, *Oss. Foss.* iv. 505. t. 39. f. 6, 7, 8, horns.

Skull and horns of male. Nepal. Presented by B. H. Hodgson, Esq.

Skull and horns of male. Nepal.

Skull of a female. Presented by B. H. Hodgson, Esq.

Skull and horns of adult. Presented by B. H. Hodgson, Esq.

Skull and horns of adult. Presented by B. H. Hodgson, Esq.

Separate horns. Presented by B. H. Hodgson, Esq.

Separate horns. Presented by B. H. Hodgson, Esq.

**ICON.**

*Barara Singha*.—*Hardw. Icon. ined. B. M.* n. 10,975. t. 132, 134 (see also t. 131).

Spotted Deer of the Sunderbands.—*Hardw. Icon. ined. B. M.* n. 10,975. t. 133, 135.

*Cervus Elaphoides*.—*Hodgson, Icon. ined. B. M.* t. 199, male and female, and one male copied t. 200. Presented by B. H. Hodgson, Esq.

Drawing of horns.—*Hodgson, Icon. ined. B. M. t. 210. f. 66.*  
—Presented by B. H. Hodgson, Esq.

The *Bahraiya* inhabits reedy marshes and islands of great rivers; never enters the mountains or forests. Tail short, with no caudal disk, and no heavy mane.—*Hodgson.*

**\*\* The upper part of the horns simply forked.**

### 3. RUSA.

Horns placed on a moderately long peduncle, with an anterior frontal snag close on the crown, and simply forked at the tip. Fur formed of hard, rigid, very thick hair, not, or only obscurely, spotted.

*Cervus* § *Rusa*, *H. Smith, Griffith A. K. iv.*; *Lesson, Mamm. i. 264*; *N. Tab. R. A. 171.*

*Rusa*, *Hodgson, Journ. Asiat. Soc. Beng. 1850, 6*; *Gray, Knows. Menag.*; *Proc. Zool. Soc. 1850.*

*Cervus*, sp., *Ogilby, P. Z. S. 1836, 135.*

*Cervus* § *Hippelaphus* \*\*, *Sundevall, Pecora, 55.*

*Axis d'une seule couleur*, sp., *Blainv. Desm. Mam. ii. 448. 182.*

*Procervus* (*Dimorpha*), *Hodgson, Journ. Asiat. Soc. Beng. 1850, 5.*

**\* Hair of the neck elongated, forming a kind of mane, at least in the males; size large.**

### 1. RUSA ARISTOTELIS. The SAMBOO.

Tail not floccose, brown, rather darker at the end. Fur blackish brown, with the feet, the regions of the vent, and a spot over the eyes fulvous. Male maned. Young obscurely white spotted (*Hodgson*). Skull: suborbital pit very large, broad, deep, oblong, subtrigonal.

*Gona Rusa, Daniel, Ceylon, t.*

*Cervus Aristotelis, Cuvier, Oss. Foss. iv. 502. t. 39. f. 10*; *F. Cuv. Mam. Lith. t.*; *Sundevall, Pecora, 55.*

*Cervus Hippelaphus, Ogilby in Royle's Himal. i. 73.*

*Cervus Hippelaphus, C. Aristotelis et C. heteroceros, Hodgson, Icon. ined.*

*Rusa Aristotelis, H. Smith; Gray, List Mamm. B. M.; Cat. Hodgson Coll. B. M. 67*; *Osteol. Spec. B. M. 67.*

*Rusa Hippelaphus, Gray, List Mamm. B. M. 179*; *Cat. Hodgson Coll. B. M. 33.*

*Rusa equinus, Gray, List Mamm. B. M. 179.*

*Cervus unicolor, H. Smith, Griffith A. K. v. 780.*

*Cerf de Coromandel, Cuvier, Oss. Foss. iv. 41. t. 5. f. 32, horns.*

- Cervus Bengalensis*, Schinz, *Syn. Mam.* ii. 390.  
 Daim noir de Bengal, Duvaucell, *Asiat. Res.* xv. 157.  
 Cerf noir de Bengal, F. Cuvier, *Menag. Lith.* t.  
*Cervus equinus* (Sambou Deer), Bennett, *Tower Menag.* 185. fig.  
 Cerf Mulet?, Cuvier, *Oss. Foss.* iv. 43. t. 5. f. 38, horn.  
 Elk, *Indian Sportsmen*; Sykes, *Proc. Zool. Soc.*  
 ? *Rusa Nepalensis*, Hodgson, *J. A. Soc. Beng.* x. 914; *Calcutta Journ. N. H.* iv. 292.  
*Cervus heterocerus*, Hodgson, *J. A. S. Beng.* 1841, 722. t.  
 C. Hippelaphus, Duvaucell, *Asiat. Res.* xv. 174.  
 Biche de Malacca, Cuvier, *Oss. Foss.* iv. 41; F. Cuv. *Mam. Lith.* t.  
*Cervus Malaccensis*, Fischer, *Syn.*  
*Cervus Saumer*, Ogilby in *Royle's Himal.* i. 75.

Mr. Hodgson notices the following varieties:—

- Var. 1.* Brown; the frontal branch short.  
*Cervus Hippelaphus*, or Phursa Jarai, *Hodgs. Icon.*, not Cuv.  
 C. Saumur, Ogilby; *Royle, Illustr.*  
 Phursa Jarai, *Hodgs. J. A. S. B.* i. 1132. 66. t. 5. f. 1-3, 346.  
*Var. 2.* The hinder part of the beam produced, longer than the upper prong.  
*Cervus Hippelaphus* var., Cuv. *Oss. Foss.* v. t. 5. f. 34.  
*Var. 3.* Rump rufous; the frontal branch of horn elongate.  
*Cervus Aristotelis* (or Râto Jarai), *Hodgs. P. Z. S.* 1834, 98; 1836, 39.  
 The Rato Jarai, *Hodgs. J. A. S. B.* i. 66. f. 4, 346.  
*Var. 4.* The upper part of the beam simple.  
*Cervus heterocerus*, or Kâlo Jarai, *Hodgs. J. A. S. B.* x. 1841, 727. t. . f. 2, x. 914; *Calc. J. N. H.* iv. 292; *Cat. Osteol. Spec. B. M.* 68.  
 Kalo Jarai, *Hodgs. J. A. S. B.* i. 1832, 66. t. 5. f. 5, 346.

India. Presented by B. H. Hodgson, Esq.

A young male, with simple horns. Deccan. Presented by Colonel Sykes.—*Sykes, Proc. Zool. Soc.* 1831.

There is only *one species* of *Rusa* found in the western forests which is common also to all the heavy jungles of Southern India.

The horns of different individuals present great diversity of forms. I have met with instances of medial antlers, of trifurcated extremities, and in one case with the extremity showing a four-fold division (see t. 4. f. 1).—*Elliot, Madras Journ.* 1840, 30.

#### OSTEOLOGY.

*Cervus Aristotelis*, Cuvier, *Oss. Foss.* iv. 509. t. 39. f. 10, horns.  
 Sambur Horns (gigantic), weight 25 lbs., circumference above burr 10½ inches, in middle of beam 8 inches.—*Zoophilus, India*

*Sporting Review, Calcutta, 1849, x. 256. t., from Cuttack coast, or Madras.*

## ANAT.

Single horn. India. Exeter Change Menagerie. Presented by Edward Cross, Esq.

Horns on frontal bone. India.

Two single horns, upper branches more equal. India.

Horns on frontal bone, like the last, but thicker, heavier and more granular.

Horns on frontal bone, like the last, but the left horn has a large posterior branch at the fork.

Horns on frontal bone, like the last, but rather smaller, hinder branch of fork longest, the left one with a posterior branch in the middle. India. Presented by Mrs. Wright.

Horns of frontal bone, like the last, but larger and without posterior branch.

Horns of frontal bone, one-third smaller.

Single horn, simple, from a castrated animal?

Skull of young male. Nepal. Presented by B. H. Hodgson, Esq.

Skull of adult female. Nepal. Presented by B. H. Hodgson, Esq.

Skull of young female. Nepal. Presented by B. H. Hodgson, Esq.

Brocket horns on frontal. Nepal. Presented by B. H. Hodgson, Esq.

Three pairs of horns, second year. Nepal. Presented by B. H. Hodgson, Esq.

Single horn of the first year.

Horns on frontal bone, hinder upper branch turned back.

Horns, very long, thick, with very short, thick frontal and submedial branch on one.

Horns, apex forked. Himalaya. Presented by the Rev. R. Everest.

Horns on frontal bone, apex simple. India.

A pair of horns. India. Presented by B. H. Hodgson, Esq.

A pair of very large thick horns, with rather long frontal snag, the left with a large posterior process. India. Presented by B. H. Hodgson, Esq.

A pair of very large, thick horns, with rather long frontal snag. India. Presented by B. H. Hodgson, Esq.

Three pairs of large horns, with moderate frontal snag, the hinder upper snag rather the longest. India. Presented by B. H. Hodgson, Esq.

A pair of similar, but rather slenderer and more elongate horns. India. Presented by B. H. Hodgson, Esq.

A pair of large horns, with rather elongated front snag, the front upper snag rather longest, the horns rather close together. India. Presented by B. H. Hodgson, Esq.

A pair of large horns, with very long frontal snags, the upper snag rather the longest. India. Presented by B. H. Hodgson, Esq.

A pair of horns, the right like the former, the left quite simple, subulate. India. Presented by B. H. Hodgson, Esq.

A pair of horns, one with a moderate, and the other with a long frontal snag, the upper snag nearly equal. India. Presented by B. H. Hodgson, Esq.

A pair of rather slender, more elongate horns, with moderate frontal and short upper snags. India. Presented by B. H. Hodgson, Esq.

A pair of horns, the beam not branched.

Head of a female. India; Himalaya.

Head and horns, with skin. India. Presented by Edward Cross, Esq.

Skeleton. India. From Mr. Bartlet's Collection.

A pair of the horns. India. Presented by B. H. Hodgson, Esq.

#### ICON.

Drawing of male.—*Hodgson, Icon. ined. B. M. t. 206. f. 1.* Presented by B. H. Hodgson, Esq.

Drawing of skull.—*Hodgson, Icon. ined. B. M. t. 187. f. 11, 12.* Presented by B. H. Hodgson, Esq.

Drawing of male, female and young.—*Hodgson, Icon. ined. B. M. t. 207.* Presented by B. H. Hodgson, Esq.

Drawing of males.—*Hodgson, Icon. ined. B. M. t. 208.* Presented by B. H. Hodgson, Esq.

Drawing of female.—*Hodgson, Icon. ined. B. M. t. 209.* Presented by B. H. Hodgson, Esq.

Gouse or Indian Black Deer.—*Hardw. Icon. ined. B. M. n. 10,975. t. 139 ♀.*

Walawah Tinkee.—*Hardw. Icon. ined. B. M. n. 10,775. t. 140 ♀, t. 141 ♂ ♀* (this figure altered by Colonel Hamilton Smith), *l. c. n. 10,975. t. 142.*

Shabur or Saubur.—*Hardw. Icon. ined. B. M. n. 10,975. t. 136 ♂, t. 137 ♀, copied t. 138 ♀; n. 10,974. t. 92 ♀, t. 93 ♀.*

The *Samburs* or *Jerrows* inhabit the great forests and the mountains above them; are not gregarious; have a long, bluff tail, like a docked horse, no disk round it; and a heavy mane over the whole neck. They rut in spring, then drop their horns. The female gestates eight months and produces young in winter.

The horns take six months for their perfect replacement, and are not complete in form until the fourth year, nor in size till the eighth year.—*Hodgson*.

Colonel Sykes believes the *Sambur* of the Mahrattas to be the *C. equinus* of H. Smith; he observes, "it wants the size and is not so dark as the *Sambur* of Bengal."—*P. Z. S.* 1831.

## 2. RUSA DIMORPHE. The SPOTTED RUSA OF GERVER.

Red brown. Back with distinct series of small white spots. Sides indistinctly white spotted. Limbs paler. Neck and belly blackish. Chin white. The horns (deformed?). *Young* bright fawn red, white spotted.

*Cervus dimorphe*, *Hodgson, Journ. Asiat. Soc. Bengal*, 1844, t.; *Ann. & Mag. Nat. Hist.* xiv. 74; *Wiegman Arch.* 1845, ii. 40; *Sundevall, Pecora*, 132.

*Rusa Dimorpha* (*Hodgson's Rusa*), *Hodgson in Gray Cat. Hodgson Coll. in B. M.* 33.

*Procervus dimorpha*, *Hodgson, Journ. Asiat. Soc. Beng.* 1850, 5. *Hab.* India; Saul Forest; Morang.

Stuffed, not good state. India. The specimen described and figured by Mr. Hodgson.

It is very doubtful if the above specimen is more than an accidental variety, with distorted horns, of the *Sambur*.

The *Gowers* are not gregarious, confined to the Saul Forest.—*Hodgson*.

## 3. RUSA HIPPELAPHUS. The MIJANGAN BANJOE.

Greyish brown. Tail not floccose, brownish at the tip. Anal region not pale. Cheeks and upper part of the neck of the males maned. *Young*: hair smooth.

*Rusa ubi*, R. saput et R. Tunjuc, *Raffles, Linn. Trans.* xiii. 268.

*Cervus hippelaphus*, *Cuvier, Oss. Foss.* iv. t. 5. f. 31, 34, 42; *F. Cuvier, Mam. Lithog.* t.; *Raffles, Mem.* 645.

*Cervus Tunjuc*, *Vigors in Raffles Memoir*, 645; *Gray, P. Z. S.* 1836, 67.

Greater Muntjac, *Waterhouse, Cat. Mus. Zool. Soc.* 1828, 13. n. 302, 303 ♂ ♀; 1839, 39.

*Cervus Rusa*, *S. Müller, Nederl. Verh.* 45. t. 43.

Cerf Noir de Bengal, *F. Cuv. Mam. Lithog.* t. 2, in summer.

*Rusa Hippelaphus*, *Gray, Knowsley Menag.* 62; *Proc. Zool. Soc.* 1850.

*Cervus Leschenaultii*, *Cuvier, Oss. Foss.* iv. 508. t. 39. f. 9, from horns only.

*Var. Smaller.*

*Cervus Molluccensis*, Quoy & Gaim. ; *Eydoux, Guérin Mag. Zool.* 1836, 26 ; *Sundevall, Pecora*, 56.

*Cervus Rusa Molluccensis*, S. Müller, *Nederl. Verh.* t. 43 3, t. 35. f. 1-4 ; *Mus. Leyden*, 1845.

*Cervus Rusa Timorensis*, *Mus. Leyden*, 1845.

*Hab.* Java.

Female. Java. From Gardens Zool. Soc.

This species was living some time at Knowsley and bred there. In all its states was very distinct from the *Samboor* of continental India.

The horns are similar to those of *R. equina*, but the body and horns are smaller, and the hair of the young is smoother.

#### OSTEOLOGY.

*Cervus Hippelaphus*, Cuvier, *Oss. Foss.* iv. 40. t. 5. f. 31, 34, 35 (*C. auritus?*), t. 5. f. 42.

*Cervus Leschenaultii*, Cuvier, *Oss. Foss.* iv. 508. t. 39. f. 9, horns only.

*Cervus Rusa*, Müller, *Verh. I. A.* t. 43. f. 1, 4.

*Cervus (Rusa) Molluccensis*, Müller, *Verh. I. A.* t. 43. f. 5.

*Cervus Rusa Timorensis*, Müller, *Verh. I. A.* t. 43. f. 6.

The specimen at Knowsley, received from Amsterdam, in summer had the fur formed of thick, rigid, waved quills. The fur is reddish brown, minutely punctated ; on the head, neck, dorsal line and shoulders blacker ; the orbits yellowish ; the lips, chin, gullet, edge of nose, whiskers, and inside of the ears, white, without any black spot on the side of the lower lip.

#### 4. RUSA EQUINUS. The SAMBOE.

Brown, not spotted. Tail rounded, floccose, black at the tip. Young very obscurely spotted. Hair rigid and rough. Skull : suborbital pit moderate, oblong, narrow.

*Rusa*, *Raffles, Linn. Trans.* xiii. 263.

*Cervus equinus*, Cuvier, *Oss. Foss.* iv. 44. t. 5. f. 30, 37, 38. f. 42 ; *H. Smith, Griffith A. K.* iv. 112. t. ; *Sundevall, Pecora*, 55 ; *S. Müller, Nederl. Verh.*

Eland or Elk, of the Dutch Sportsmen.

*Hab.* Sumatra ; Borneo.

#### OSTEOLOGY.

*C. equinus*, Cuv. *O. F.* v. t. 5. f. 30, 42.

The specimens received from Amsterdam in the Knowsley Menagerie had the hair short, rigid, close-pressed, not waved ; dull blackish brown ; the lips, chin, and spot above each eye, white ;



lower lip with a black spot in the middle of each side; whisker black; ears nearly naked; inside and large spot at the upper inner part of the base whitish.

*Size smaller. Mane none. The peduncle of the horns rather elongated, and covered with hair.*

#### 5. RUSA PERONII. THE SMALLER RUSA.

Brown, pale beneath. Hair rigid, *thick*, ringed. Muzzle dark. Tail brown, floccose. Anal disk white. The hind part of the feet hairy. The horns are thick and heavy. Skull: suborbital pit large and deep.—*Cuvier*, fig.

*Cervus Peronii*, *Cuvier*, *Oss. Foss.* iv. 46. t. 5. f. 41, horns, f. 45, skull; *Sundevall*, *Pecora*, 56.

*Cervus Kuhlîi*, *S. Müller*, *Nederl. Verh.* 45. t. 44; *Sundevall*, *Pecora*, 56.

*Rusa Kuhlîi*, *Gray*, *List Osteol. Spec. B. M.* 68; *Knowsley Menag.*; *Proc. Zool. Soc.* 1850.

*Hab.* Timor and Luboc; Bavian and Ternate.

*Male.* Timor. From the Leyden Museum.

*OSTEOLOGY.* *Cuvier*, *Oss. Foss.* iv. 46. t. 5. f. 41–45; *S. Müller*, *Nederl. Verh.* t. 43. f. 12, 14.

*Femur and tibia.* Timor.

#### 6. RUSA PHILIPPINUS. PHILIPPINE RUSA.

Forehead brown. End of nose and eyebrows brownish. Hair rigid, rather short. Neck not maned. Feet naked behind.

*Cerv de Philippine*, *Desm. Mam.* 442.

*Cervus* (Muntjac) *Philippinus*, *H. Smith, Griffith A. K.* iv. 147. t. 164. f. 5 (head), v. 803; *Fischer*, *Syn.* 622.

*C. (Hippelaphus) Philippinus*, *Sundevall, Pecora*, 56.

*Cerv de Manille*, *Cuvier*, *Oss. Foss.* iv. 46.

*Rusa Philippinus*, *Knowsley Menag.* 63; *Proc. Zool. Soc.* 1850.

*Var.?* Tail black, dependent. Front of face dark.

*Cervus Marianus*, *Cuvier*, *Oss. Foss.* iv. 45. t. 5. f. 30, 37, 38, 46; *H. Smith, Griffith A. K.* iv. 115. t., from Mus. Paris; *Fischer*, *Syn.* 453; *Sundevall, Pecora*, 57.

*Hab.* Philippines.

*OSTEOLOGY.* *Cuvier*, *Oss. Foss.* iv. 45. t. 5. f. 39, 40, f. 46, skull.

*Horns.* Philippines. Presented by Capt. Sir Edward Belcher, K.C.B. &c.

This species has the horns or elongated peduncles like the *Muntjacs*, but it is easily distinguished from them by the absence of the ridge, and of the grooves on the face.

#### 7. RUSA LEPIDA. SUNDEVALL RUSA.

Reddish brown. Back and sides varied, with pale spotted hair. Vent disk small, white, black edged above. Tail longly hairy, white, above black. Face brown, with a roundish white spot in front of the usual oral black spot. Horns smooth, slender, nearly straight, elongate, the basal snag bent down on the forehead.

*Cervus* (*Hippelaphus*) *lepida*, *Sundevall, Pecora*, 57.

*Rusa lepida*, *Gray, Knowsley Menag.* 63; *Proc. Zool. Soc.* 1850.

*Hab.* Java? Young male specimen in Mus. Frankfurt.

Scarcely as large as a Roebuck.

#### 4. AXIS.

Fur formed of thick polished hairs, fulvous, and beautifully white spotted at all seasons. Face elongate, narrow. Ears large, rather elongate and acute. Tail rather elongate. Legs nearly equally long slender. The horns are placed on moderately long peduncles. The skull is elongate, narrow, with an oblong, rather small, deep suborbital pit.

*Axis*, *Hodgson, Journ. Asiat. Soc. Beng.* 1850, 7; *Gray, Knowsley Menag.* 64; *Proc. Zool. Soc.* 1850.

*Cervus* § *Axis*, *H. Smith, Griffith A. K. v.* 1827; *Lesson, Mamm.* i. 267; *N. Tab. R. A.* 172, 1842.

*Cervus Hippelaphus* § \*\*\*, *Sundevall, Pecora.*

*Axis tachetée*, *Blainv. Desm. Mam.* ii. 448, 1822.

#### 1. AXIS MACULATA. THE AXIS OR CHITTRA.

Fulvous, with a black dorsal streak ornamented, and two series of white spots. Sides with many white spots in oblique curved lines, and with a short white streak obliquely across the haunches. Young fawn spotted exactly like the adult.

*Axis*, *Pliny*; *Buffon, H. N. xi. t.* 38, 39; *Cuvier, Menag. Mus. t.*; *Oss. Foss.* iv. 38. t. 5. f. 24, 29.

*Cervus Axis*, *Erxl. Syst.* 312; *Schreb. t.* 250; *H. Smith, Griff. A. K. v.* 786; *Cuvier, Oss. Foss.* iv. 39. t. 5. f. 29, horns; *Ogilby in Royle's Himal.* 73; *Bennett, Gard. Z. S.* 253; *Sundevall, Pecora*, 57.

*Axis maculata*, *J. Brookes, Cat. Mus.* 62, 1828; *Gray, List Mamm. B. M.* 178; *Cat. Osteol. Coll. B. M.* 178; *Cat. Hodgson Coll. B. M.* 32; *Knowsley Menag.* 63; *Proc. Zool. Soc.* 1850.

*Axis major*, *Hodgson, J. A. S. B. x. 914; Calcutta Journ. N. H. iv. 292.*

*Axis minor*, *Hodgson, J. A. S. B. x. 914.*

*Axis medius*, *Hodgson, Icon. ined.*

Cerf Cochon, *Buffon, Hist. Nat. Supp. iii. 122. t. 18.*

*C. axis Ceylonensis*, *H. Smith, Griffith A. K.*

Spotted Axis or Chittra, *Hodgson, J. A. S. Beng. i. 346.*

The Chittra or Axis, *Hodgson, Mam. Icon. ined. n. 204. 1.*

Langna, or Pada, or Spotted Porcine Deer, *Hodgson, J. A. S. B. i. 346.*

The Thou or Spotted Porcine Axis, *Hodgson, Mam. Icon. ined. n. 204. 2 (horn smaller).*

*Axis medius*, or Spotted Hog Deer, or Thou Langna of the Tarai, *Hodgson, l. c. 205, horns smaller.*

Axis Deer, *Knight, Mus. Anim. Nat. f. 614.*

*Hab.* India; Ceylon.

Male. India. Presented by P. Ducane, Esq.

*Var. 1.* Blackish.

*Cervus nudipalpebra*, *Ogilby, Proc. Zool. Soc. 1831, 136; 1839, 150; Sundevall, Pecora, 57. 131.*

Female. India. Presented by Edward Cross, Esq.

Male and female. India.

Young. India.

Young? (yellow). India.

Fœtus from spirits? India.

*Var. Smaller.* Fulvous; spots and a streak across the haunch and along the lower part of side, white.

*Axis minor*, *Hodgs. J. A. S. B. x. 914; Calc. J. N. H. iv. 292.*

*Axis medius*, *Hodgs. Icon. ined. 205.*

Lesser Spotted Deer, *Hodgs.*

?Langna, or Puda, or Spotted Porcine Deer, *Hodgs. J. A. S. B. i. 346.*

*Hab.* Nepal; Tarai.

#### OSTEOLOGY.

*Axis*, *Daub. Buff. H. N. xi. t. 40; Cuvier, Oss. Foss. iv. 38. t. 5. f. 24-29.*

Cerf Cochon, *Buffon, H. N. Supp. iii. t. 18 (not Pennant); Cuvier, Oss. Foss. iv. t. 5. f. 29.*

Horns on frontal bone, slender, elongate, warty. India.

Horns on frontal bone, slender, elongate. India.

Horns on frontal bone, slender, elongate, simple. India.

Skull and horns of the normal state. Nepal. Presented by B. H. Hodgson, Esq.

Horns of the usual form, with two snags near the base of the right, and one on the left side. Nepal. Presented by B. H. Hodgson, Esq.

Horns, with three small snags near the base, and a short terminal beam. Nepal. Presented by B. H. Hodgson, Esq.

Horns on frontal bone, elongate, and very warty. Nepal. Presented by B. H. Hodgson, Esq.

Skull and horns. India.

Horns on frontal. India.

Horns on frontal. India.

Horns on frontal. India.

Horns on frontal, smooth. India.

Horns on frontal, very warty. India.

Horns on frontal bone, with two snags near the base of the left, and one on the right side. Nepal. Presented by B. H. Hodgson, Esq.

Horns on frontal bone.

Skull of male. Nepal. Presented by B. H. Hodgson, Esq.

Horns on frontal bone. India.

Horns, very long, thick, with very short, thick frontal and submedial branch on one.

Axis Pennantii.—Gray, *Cat. Osteol. B. M.* 180.

#### ICON.

Drawing of male.—Hodgson, *Icon. ined. B. M. t.* 204. f. 1. Presented by B. H. Hodgson, Esq.

Drawing of horns.—Hodgson, *Icon. ined. B. M. t.* 212. f. 22. Presented by B. H. Hodgson, Esq.

Drawing of male.—Hodgson, *Icon. ined. B. M. t.* 204. f. 2.

Drawing of male and female.—Hodgson, *Icon. ined. B. M. t.* 205.

Drawing of horns.—Hodgson, *Icon. ined. B. M. t.* 212. f. 33?

Large Axis.—Hardw. *Icon. ined. B. M. n.* 10,975. t. 126, t. 127. horns.

The horns of this species vary greatly in size.

Pennant describes two Deer, under the names of—

1. Greater Axis, *Penn. Syn.* 52; *Quad.* 106 = C. Axis  $\gamma$ . *Gmelin*;
  2. Middle-sized Axis, *Penn. Quad.* 106 = C. Axis  $\beta$ . *Gmelin*;
- from the horns alone. These are probably only large-horned examples of the common species.

The *Chitals* inhabit the plains of India; gregarious, the herds being often very large. Tail elongate, reaching to the hocks, ending in a point. The fur smooth and spotted, without any mane. They rut in December and breed in May, and gestate six months.

3. *AXIS PSEUDAXIS*. The SPOTTED *AXIS*.

Fulvous, white spotted, a series of spots on the lower part of each side, and an oblique series of spots on the haunches.

*Cervus pseudaxis*, *Gervais, Voy. Bonite*, 64. t. 12; *Institute*, 1841, 419; *Sundevall, Pecora*, 57.

*Hab.* —. *Mus. Paris*.

This species chiefly differs from *Axis maculata* in having a series of spots in the place of the oblique streak on the haunches.

Mule between *Cervus Axis* and *C. pseudaxis*, *Pucheran, Compt. Rendus Acad. Sci.* 1849, 774.

M. Pucheran considers these two species to belong to different sections of the genus!—*Compt. Rendus*, 1849, 778.

5. *HYELAPHUS*, *Sundevall*.

Fur of moderately thick, palish hair, fulvous, and spotted in the summer. Tail rather elongate. Legs rather short, the front being rather the shortest. Face short, broad, and arched in front. Ears short and rounded. Horns placed on moderately elongated peduncles.

*Hyelaphus*, *Gray, Cat. Osteol. B. M.* 67; *Knowsley Menag.* 64; *Proc. Zool. Soc.* 1850.

*Cervus* § *Hyelaphus*, *Sundevall, Pecora*.

*Axis*, sp., *Blainv. Desm. Mam.* ii. 448, 1822; *Lesson, Mamm. i.* 268; *H. Smith, G. A. K.*

1. *HYELAPHUS PORCINUS*. The LUGNA PARA or SHGORIAH.

Brown or yellowish brown, with an indistinct, darker dorsal streak, and with obscure whitish spots, but without any white streak on the sides or haunches; in the winter brown and spotless. Forehead, face and front of legs darker. Line down the front of and the inside of the thighs white.

Porcine Deer, *Penn.* 42. t. 8. f. 2.

*Cervus Hippelaphus* var., *Cuvier, Oss. Foss.* iv. 43. t. 5. f. 31, horns.

*Cervus porcinus*, *Zimmer. Schreb.* t. 251; *Horsf. Proc. Z. Soc.* 1839, 150; *F. Cuvier, Mam. Lithog.* t.; *Ogilby in Royle's Himal.* 72; *Proc. Z. Soc.* 1839, 150.

*Cervus (Hyelaphus) porcinus*, *Sundevall, Pecora*, 58.

*Axis porcinus*, *J. Brookes, Cat. Mus.* 62, 1828; *Hodgson, J. A. S. B.* x. 914; *Calcutta Journ. N. H.* iv. 292; *Gray, Cat. Hodgson Coll. B. M.* 33.

*Cervus niger*, *Hamilton, Icon. ined.*; *Blainv. Bull. Soc. Philom.* 1816, 76; *Fischer, Syn.* 454; *Sundevall, Pecora*, 60. 132.

Brown Porcine Axis, *Hodgson, Journ. A. Soc. Beng.* i. 346.

*Hyelaphus porcinus*, *Gray, Cat. Osteol. B. M.* 67; *Knowsley Menag.* 64. t. 42; *Proc. Zool. Soc.* 1850.

*Cervus Hippelaphus*, var. 3, *Cuvier, Oss. Foss.* iv. 43 (for *C. niger*).

Var. Albino, *McClelland, Proc. Zool. Soc.* 1839, 150.

Hab. India; Plains of Hindostan; Ceylon; Assam and Tarai of the Kemaon Mountains; *McClelland*.

Male. India.

A flat, imperfect skin of young, with horns. Nepal. Presented by B. H. Hodgson, Esq.

?A flat skin of female, greyish, with broad dorsal streak; fur rough; head imperfect. Nepal. Presented by B. H. Hodgson, Esq.

A flat skin of female, reddish, with narrow dorsal streak. Nepal. Presented by B. H. Hodgson, Esq.

#### OSTEOLOGY.

Porcine Deer, *Penn. Hist. Quad.* t. 19. n. 59, not *Buffon, Supp.*

*Cervus niger*, *Blainv. Bull. Soc. Phil.* 1816, 76. fig.

Skull of the female. Nepal. Presented by B. H. Hodgson, Esq.

Skull, with horns. Nepal. Presented by B. H. Hodgson, Esq.

Horns, separate. Nepal. Presented by B. H. Hodgson, Esq.

Skull, with horns.

Skull, with horns. India.

Horns on frontal bone. India.

Horns, separate. India. Presented by General Hardwicke.

Horns, separate. India. Presented by General Hardwicke.

Horns, separate. India. Presented by General Hardwicke.

Two horns, single, not forked at the tip.

Skull and horns, var. frontal snag elongated and thick.

Four pair of horns. India. From Mr. Argent's Collection.

#### ICON.

Hog Deer, *Cervus porcinus* (head of female).—*Forster, Icon. ined. B. M.* t. 14, from India.

Porcine Deer.—*Hardw. Icon. ined. B. M.* n. 10,975. t. 121 ♂, t. 122, head ♂, t. 123 ♀; n. 10,974 (t. 84). t. 99.

Drawing of male in winter, and female in summer.—*Hodgson, Icon. ined. B. M.* t. 201. Presented by B. H. Hodgson, Esq.

Drawing of female in young and adult age.—*Hodgson, Icon. ined. B. M.* t. 202. Presented by B. H. Hodgson, Esq.

The tail bushy and often carried erect. The males and females in summer are reddish brown, with numerous white spots; the middle of the back rather darker. In winter the whole fur becomes blackish brown, and the spots disappear.

The *Para* live in families or small herds on the plains. They

rut in December or January and breed in May, whence they gestate six months.—*Hodgson*.

Do not ascend the mountains.—*Ogilby*.

Easily known from the *Axis* by being lower on its legs, and there is no distinct black dorsal streak, nor white streak on haunches. The horns are generally short, with only short snags or branches, but they are sometimes as large as those of the *Axis Deer*.

The *Cervus Dodur*, *Royle, Himal. t. 5. f. 1*, and *Ogilby in Royle, i. 73*, of the Himalayas, "of an ashy grey colour, the size of the female *Antilope Cervicapra*, and more graceful than the Hog Deer," is only known from the above description and figure of a female. As Hog Deer are said not to ascend the mountains, it is probably a distinct species.

*Cervus Pumilio*, *H. Smith, Griffith A. K. v. n. 788*; *McClelland, P. Z. Soc. 1839, 150*, is perhaps only a variety of the Hog Deer.

## 6. CERVULUS.

Horns on elongated pedicels, supported by longitudinal ridges on the face, which have a naked moist groove on their side. Canine teeth exerted. Crumen large and deep. Tail elongate and tufted. Hoofs triangular and partly united in front by a web; the false hoofs are small and transverse. Fur of thin, shining hair, and not spotted. They have no tuft of hair on the outside of the hind legs. Skull with a very large, deep, nearly hemispherical suborbital pit. The young, before the horns appear, have a bald groove on the head.

*Muntjacus*, *Gray, Lond. Med. Repos. 1821*; *Cat. Mamm. B. M. xxvii*.

*Muntiacus*, *Rafinesque, Anal. Nat. 56, 1815*.

*Stylocerus*, *H. Smith, G. A. K. iv. 182*; *Lesson, Mamm. i. 273*; *Nov. Tab. Reg. Anim. 174*.

*Prox (Moschatus)*, *Ogilby, P. Z. S. 1836, 135*; *Sundevall, Percora, 61*.

*Cervulus*, *Gray, Knowsley Menag. 65*; *Proc. Zool. Soc. 1850*.

*Cervus* § *Cervulus*, *Blainv. Bull. Soc. Phil. 1816, 74*.

*Cerf*, § *Les Cervules*, *Blainv. Desm. Mam. ii. 449, 1822*; *Lesson, Mam. 368*.

*Cerf à longues canines*, *Lesson*.

*Stylocerinidæ*, *J. Brookes, Mus. Cat. 62*.

*Dioplon*, *J. Brookes, Mus. Cat. 62*.

### 1. CERVULUS VAGINALIS. The KIJANG or MUNTJAC.

Dark reddish brown. Narrow streak on the front edge of the thigh white.

K

Kijang, *Marsden, Sumatra*, 94.

*Cervus Muntjac*, *Zimm. Schreb.* t. 254; *Horsf. Java*, vi. t. 1; *Raffles, Mem.* 645.

*Dioplon Muntjak*, *J. Brookes, Mus. Cat.* 62, 1828.

*Prox muntjac*, *Sundevall, Pecora*, 61.

*Cervus vaginalis*, *Bodd. Elenc.* i. 136.

*Cervus (Cervulus) subcornutus*, *Blainv. Schreb.* t. 254 B. f. 2.

*Cervus plicatus*, *Forster, MSS. Icon. ined. Mus. Banks.*; *H. Smith, Griffith A. K.* iv. 147.

*Muntjacus vaginalis*, *Gray, Cat. Mamm. B. M.* 173.

?*Cervus (Muntjac) aureus*, *H. Smith, Griffith A. K.* iv. 148. t. 176?, v. 805.

Ribbed-face Deer, *Penn.*

*Chevreuil des Indes*, *Allam, Buff. Supp.* v. 41. t. 17, vi. 195. t. 26; *Cuvier, Oss. Foss.* iv. t. 5. f. 48, t. 3. f. 49, 54.

*Cervulus vaginalis*, *Gray, Knows. Men.* 65; *Proc. Zool. Soc.* 1850.

*Hab.* Sumatra; Java.

#### OSTEOLOGY.

*Cervus Muntjack*, *Horsf. Java*, t.; *Anat.* 6. f. A, B.

*Muntjak of Sumatra*, *H. Smith in G. A. K.* iv. t. 164. f. 7, jun., t. 175, adult ♂.

*Muntjak of Java*, *H. Smith in G. A. K.* iv. t. 164. f. 9 ♂.

#### ICON.

*Cervus Muntjac*, *Desch. MSS. Icon. ined. B. M.* t. 35.

This chiefly differs from the following in being darker-coloured.

#### 2. CERVULUS MOSCHATUS. THE KEGAN OF KACHER.

Bright reddish yellow. Streak on front of the thigh and under part of the tail white. Chin and gullet whitish. Hair not ringed.

*Var.* With a triangular white spot on each side of the chest.

Musk Deer of Nepal, *Ousley, Orient. Collect.* ii. t., 1798.

*Cervus* & *Cervulus moschatus*, *Blainv. Bull. Soc. Phil.* 1816, 77; *Schreb. Saugth.* t. 254 B. f. 1.

*Cervus Moschus*, *Desm. Mam.* 441.

*Cervus Ratwa*, *Hodgson, J. A. S. B.* i. 346. t., head; *P. Z. S.* 1834.

*Cervus Rutwa*, *Royle, Himal.* t. 5. f. 2; *Ogilby in Royle's Himal.* 73.

*Cervus moschatus*, *Nepal Muntjak*, *H. Smith, G. A. K.* iv. 149. t. 177, v. 806; *Hodgson, Journ. A. S. B.* i. 346.

*Stylocerus Ratwah*, *Hodgson, J. A. S. B.* x. 914; *Calcutta Journ. N. Hist.* iv. 292.

*Cervus Muntjac (Kacher)*, *Ogilby in Royle's Himal.* i. 73.



*Muntiacus vaginalis*, part., Gray, *List Hodgson Coll. B. M.* 173;  
*Cat. Osteol. B. M.* 68; *Cat. Hodgson Coll. B. M.* 31.

Prox Ratwa, *Sundevall, Pecora*, 62.

Prox albipes, *Wagner, Suppl.*; *Sundevall, Pecora*, 62.

Prox stylocerus, *Wagner, Suppl.*; *Sundevall, Pecora*, 62, 64.

*Cervulus moschatus*, Gray, *Knowsley Menag.* 65; *Proc. Zool. Soc.* 1850.

Jungle Sheep, *India*.

*Hab.* India.

Deep chestnut, becoming browner as the animal grows.—*Elliot*.

*Var.*? "Entirely black."

*Cervus melas*, *Ogilby, P. Z. Soc.*; in *Royle's Himal.* 73.

Prox melas (*Ogilby*), *Sundevall, Pecora*, 62.

*Hab.* Continental India; *Ogilby*.

Male. India.

Female. India.

Head of male, with horns. India; Northern Circars.

Head and horns of male. India; Deccan. Presented by Colonel Sykes, F.R.S. &c. Deccan.

A male. Nepal.

An adult. Nepal. Presented by B. H. Hodgson, Esq.

A female; dorsal streak none. Nepal. Presented by B. H. Hodgson, Esq.

A foetal specimen, with an obscure, dark dorsal streak. Nepal. Presented by B. H. Hodgson, Esq.

OSTEOLOGY, t. 32. f. 2.

*Chevreuil des Indes*, *Buffon, Supp.* iii. t. 36; *Cuvier, Oss. Foss.* iv. t. 3. f. 49-53, t. 5. f. 48.

*Cervus moschatus*, *Blainv. Bull. Soc. Phil.* 1816, 77; *Schreb. Mam.* t. 254 B. f. 1.

Two skulls, half-grown, and young. Nepal. Presented by B. H. Hodgson, Esq.

\*Skull.

Head of male and horns. Northern Circars.

Head and horns of male. Deccan. Presented by Colonel Sykes, F.R.S.

Skull and horns. Nepal. Northern Circars.

Skull and horns. Nepal. Presented by B. H. Hodgson, Esq.

Base of skull and horns. Nepal.

Skull.

Two skulls of a male, with horns, differently developed. Presented by B. H. Hodgson, Esq.

Skull, female. Presented by B. H. Hodgson, Esq.

A pair of large horns on shortish peduncles. Nepal. Presented by B. H. Hodgson, Esq.

A pair of small horns on very long, slender peduncles. Nepal. Presented by B. H. Hodgson, Esq.

Vertebra, pelvis, and leg bones. Nepal. Presented by B. H. Hodgson, Esq.

#### ICON.

Drawing of skull.—*Hodgson, Icon. ined. B. M. t. 187. f. 14.*  
Presented by B. H. Hodgson, Esq.

Drawing of male and female.—*Hodgson, Icon. ined. B. M. t. 193, 194.* Presented by B. H. Hodgson, Esq.

Drawing of head of male.—*Hodgson, Icon. ined. B. M. t. 195.*  
Presented by B. H. Hodgson, Esq.

Drawing of horns of different ages.—*Hodgson, Icon. ined. B. M. t. 196.* Presented by B. H. Hodgson, Esq.

Drawing of head in pencil, *Cervus plicatus*, *Bank. Icon. ined. B. M. i. t. 6.*

Drawing of Kaleeātōo or Stag Deer of the Tamouleans.—*Hardw. Icon. ined. B. M. n. 10,975. t. 145, copied n. 10,974. t. 88; n. 10,975. t. 146, 147, copied n. 10,974. t. 87.*

Drawing of Chickera or Mountain Deer.—*Hardw. Icon. ined. B. M. n. 10,975. t. 144, copied n. 10,974. t. 89; n. 10,975. t. 162, 163.*

The *Ratwa* live in the mountains, or the forests at their bases; they live six or eight together, preferring dell and close cover. They bark all the year, but particularly in winter, when the males are wanton. The horns fall in May, and are perfect again in August. They rut in January or February and breed in June or July, gestating six months. The females have bristly tufts, ending in a knob, instead of a horn. The fascial creases are large, mobile, glandular, placed above the inner side of the horn pedicels.

See also—

1. Muntjak of Ceylon, *H. Smith, G. A. K. iv. t. 164. f. 8 ♀.*
2. ? Muntjak, *H. Smith, G. A. K. iv. t. 164. f. 10 ♀.*

### 3. CERVULUS REEVESII. The CHINESE MUNTJAC.

Greyish brown. Hair short, pale, ringed.

*Cervus Reevesii*, *Ogilby, P. Z. Soc. 1838, 105.*

*Prox Reevesii*, *Wagner; Sundevall, Pecora, 62.*

*Cervulus Reevesii*, *Gray, Knowsley Menag. 65; Proc. Zool. Soc. 1850.*

*Hab.* China.

Mr. Ogilby observes, "This species has a longer head and tail than the common Indian Muntjac, also has less red and more

blue in the general shades of colouring, and is readily distinguished by the want of the white over the hoofs, which is so apparent in its congeners. The fawn is spotted."

The Earl of Derby has these three kinds at Knowsley, but they breed together, and it has hence become impossible to discriminate the mules from the original species.

5. The Capreoline Deer. *Horns without any anterior, basal snag, the first branch being considerably above the burr, very shortly peduncled. Crumen very small. Muffle broad and naked. Suborbital gland and pit in the skull generally small and shallow, except in the genus Pudu. The tuft of hair on the inside of the hock distinct. The tuft on the outer side of the tarsus sometimes present.*

Capreoline Deer, *Gray, Ann. & Mag. N. H.* 1850; *Knows. Menag. Anoglochis, Bravard, Foss. Puy du Dôme; Lesson, Mam.* 259.

*Cerfs (Les Chevreuils et Les Daguet), Blainv.; Lesson, Mam.* 365, 367.

Capreolidæ, *J. Brookes, Mus. Cat.* 62, 1828.

#### A. Horns branched.

- a. *Tarsal tuft above middle of bone. Old Continent.*

Capræa, *Ogilby.*

*Les Chevreuils, Blainv. in Desm. Mam.*

Capreolidæ, *J. Brookes, Cat. Mus.* 62, 1828.

#### 1. CAPREOLUS.

Horns nearly erect, small, cylindrical, slightly branched, with a very short peduncle. Tail none, but a large, white anal disk. Crumen very indistinct. Hoofs narrow, triangular. The tuft on the hind-legs rather above the middle of the metatarsus. Fur of thick, brittle hair in winter, and thinner and more flexible hair in the summer. The adults are not spotted, and have a black spot at the angle of the mouth. The skull has a very small, shallow, suborbital pit. Intermaxillary nearly to the nasal. Infraorbital impression very slight, rather deeper in the middle. Nasal not dilated behind. Two central lower cutting-teeth dilated above, outermost very narrow.

Found in Europe and North Asia.

Caprea (capreolus), *Ogilby, P. Z. S.* 1836, 135.

Capreolus, *Gray, Lond. Med. Repos.* 1821; *Ann. & Mag. N. H.* 1850; *Knowsley Menag.; Proc. Zool. Soc.* 1850; *Lesson, Mamm.* i. 269; *N. Tab. R. A.* 172.

*Cervus*, § *Capreolus*, *H. Smith, Griffith A. K.* iv. 1827.

*Cerf Chevreuil* (de l'ancien Continent), *Blainv. Desm. Mam.* ii. 448, 1822; *Lesson, Man. Mamm.* 365.

1. *CAPREOLUS CAPRÆA*. The ROEBUCK, t. 33. f. 1, t. 34. f. 4.

Inside of the ears fulvous. Chin white, with a black spot below the angle of the mouth.

*Capræa*, *Plinii Hist. Nat.* viii. c. 55; *Gesner, Quad.* 324. fig.; *Jonston, Quad.* 77. t. 31, 35.

*C. Plinii*, *Ray, Syn. Quad.* 89.

*Capreolus*, *Brisson, R. A.* 89.

*Cervus minimus*, *Klein, Quad.* 24.

*Cervus capreolus*, *Linn. S. N.* i. 94; *Gmelin, S. N.* i. 180; *Erzl. Syst.* 313; *Schreb. Saugth.* 1104. t. 212 A, B; *Pallas, Zool. Ross. A.* i. 219; *Brandt, Bull. Acad. Petersb.* iii. 280; *Desm. Mamm.* 439; *F. Cuv. Mam. Lith. t.*; *Fischer, Syn.* 450, 619; *H. Smith, G. A. K.* iv. 124. t., v. 790.

*Capreolus Capræa*, *Gray, List Mamm. B. M.* 176; *Cat. Osteol. B. M.* 64.

*Capreolus europeus*, *J. Brookes, Mus. Cat.* 62, 1828; *Sundevall, Pecora*, 61. 184.

*Roe, Penn. Syn. Quad.* 53; *Quad.* 108; *Shaw, Zool.* ii. 291.

*Roebuck, Penn. Brit. Zool.* 18. t.; *Knight, M. A. N.* f. 615; *Bell, Brit. Quad.* fig.

*Chevreuil et Chevette*, *Buffon, H. N.* vi. 198. t. 32, 33.

*Chevreuil d'Europe*, *Cuvier, Reg. Anim.* i. 257; *Oss. Foss.* iv. 47. t. 1. f. 37-40.

*Rehbock, Riding, Jagd. Th.* t. 9; *Meyer, Thier.* ii. 677. 74; *Wildung, Taschenb.* 1797, i. t. 1, 2.

*Hab.* Europe.

Female. Scotland.

Male (bad condition). Scotland.

Male, new horns, with fur coat. Presented by the Earl of Derby.

Adult male in winter. France.

Adult female in summer. France.

OSTEOLOGY, t. 33. f. 1. t. 34. f. 5. *Volkman, Anat. Anim.* i. t. 11. f. 3, t. 12. f. 4; *Kaup, Allg. Zool. t.* f. 13.

*Chevreuil*, *Daub. Buff. H. N.* vi. t. 35. f. 36; *Cuvier, Oss. Foss.* iv. 47. t. 3. f. 37, 40; *Gay & Gervais, Ann. Sci. Nat.* 1846, 93.

Horns, adult. Scotland.

Horns, second year. Scotland.

Single horns. Scotland.

Base of skull of adult, with horns. Scotland. Presented by General Hardwicke.

Horns on skull (diseased), very warty. Scotland. Presented by Lord Willoughby d'Eresby.

Two skulls, female. Mr. Argent's Collection.

*Var.* Horns divided into several short branches at the top.  
 Roe Buck in Berlin Mus., *H. Smith in Griffith A. K.* iv. t. 164. f. 6.  
*Cervus* from Brazils (?), *Cuvier, Oss. Foss.* iv. t. 3. f. 48.

## 2. CAPREOLUS PYGARGUS. The AHU.

Interior of the ears fulvous. Chin pale, blackish behind, nearly to the angle of the mouth.

*Cervus pygargus*, *Pallas, Reise*, i. 97, 198, 433; ii. 159; *Spic.* xii. 7; *Eral. Syst.* 317; *Gmelin, S. N.* i. 175 (not *Hardwicke*); *Schreb. Saugth.* 1118. t. 253; *Desm. Mamm.* 440; *Fischer, Syn.* 450, 619; *Brandt, Bull. Acad. Petersb.* iii. 280; *Wiegman, Arch.* 1845, ii. 40.

*C. capreolus*  $\beta$ , *Pallas, Zool. Ross. Asiat.* i. 219.

*Cervus Ahu*, *Griffith, A. K.* iv. 122. t., v. 789.

*Ahu, S. G. Gmelin, Reise*, iii. 496. t. 56.

*Capreolus pygargus*, *J. Brookes, Mus. Cat.* 62, 1828; *Sundevall, Pecora*, 61; *Gray, List Mamm. B. M.* 176; *Proc. Zool. Soc.* 1849, 64.

Tailless Deer, *Penn. Quad.* i. 121.

Tailless Roe, *Shaw, Zool.* ii. 287.

Chevreuil de Tartarie, *Cuv. Reg. Anim.* i. 257.

*Ahu, Persians.*

*Siaga, Tartars.*

*Dikaja Kosa, Russians.*

*Hab.* Central Asia.

A male and female. Siberia. From M. Brandt's Collection.

*b. Tarsal tuft absent or below middle of bone.* New Continent.

*Mazamadæ, J. Brookes, Cat. Mus.*

## 2. BLASTOCERUS.

Horns straight, erect, three-branched, without any basal snag. Tail very short. Ears rather large. Fur consisting of very thin, soft hair. They have a distinct pencil of hairs on the inside of the hock, but none on the outside of the metatarsus. Skull with oblong suborbital pit, rather deep. Confined to South America. The young are described by Azara as not spotted!

*Blastocerus*, *Gray, Proc. Zool. Soc.* 1850.

*Blastocerus*, sp., *Wagler; Sundevall, Pecora*, 59; *Gray, Knowsley Menag.*

*Furcifer*, part., *Wagler*; *Sundevall, Pecora*, 59; *Gray, Knowsley Menag.*

*Mazama*, sp., *H. Smith, Griffith A. K.* v.

*Cariacus*, sp., *Lesson, N. Tab. R. A.* 173, 1842.

*Chevreuils du Nouveau Continent* (part.), *Blainv. Desm. Mamm.* ii. 448, 1822.

# 1. BLASTOCERUS PALUDOSUS. The GUAZUPUCO.

Fulvous. Orbit, sides, muzzle, belly, and under side of tail, white. Face-marks and feet blackish.

*C. Mazama paludosus* (Guazupuco Deer), *H. Smith, G. A. K.* iv. 134. t. 169, v. 796.

*Cervus paludosus*, *Desm. Mamm.* 443; *H. Smith; Fischer, Syn.* 444, 616; *Licht. Darst.* t. 17; *Renger*, 344.

*Cervus Blastocerus paludosus*, *Sundevall, Pecora*, 59.

*C. palustris*, *Desmoul. Dict. Class. H. N.* iii. 379.

*Cervus dichotomus* (Guatzupucu), *Illiger, Abhand. Akad. d. W.* 1804-1811, 117; *Pr. Max. Nieuw. Ins.* 1821, 650. t. 6.

*Cervus mexicanus*, *Goldfuss in Schreb. Saugth.* 1124; *Gmelin, S. N.* i. 179; *F. Cuv. Dict. Sci. Nat.* vii. 483.

*Gouazoopoucou*, *D'Azara, Essai*, i. 45, 70, 73; *Apuntamientos*, i. 35.

Guazu-ete, *Brazilians.*

Guazu pucu, *Renger*, 344.

?*Mazama* (or *Cervus*) *furcata*, *Gray, List Mamm. B. M.* 176; *Cat. Osteol. B. M.* 64.

*Hab.* South America.

## ANAT.

Horns. S. America?

The Thick-horned Guazuti, *Mazama? furcata*, *Cervus furcatus*, *Gray, List Osteol. B. M.*

Colonel Hamilton Smith's figures, from life, represent the tail erect, showing a great quantity of white hair; and the face is dark in front, with a dark ring round the gape, which are not indicated in *Lichtenstein's* figure.

# 2. BLASTOCERUS CAMPESTRIS. The MAZAME or GUAZUTI.

Fulvous brown. The hairs of the lower part of the nape and front of the back reversed. The hoofs narrow. *Young*: middle of back not spotted. Sides with small white spots, the upper series forming a regular line.

*Mazame*, *Hernandez, Mex.* ix. c. 14. 324; *Buffon, H. N.* xii. 317. *Veados branco*, V. do campo, *Anchieta, Notic.* i. 127.

*Cervus bezoarticus*, *Linn. S. N.* ed. 10. 67; *Zimm. Geog. Gesch.* ii. 132.

*Cervus campestris*, *F. Cuvier, Dict. Sci. Nat.* vii. 484?; *Desm. Man.*; *Cuvier, Oss. Foss.* iv. 51. t. 5. f. 46, 47; *Pr. Max. Beitr.* ii. 583; *Abbild.* t.; *Waterhouse in Darwin, Zool. Beagle*, 29. fig. horns; *H. Smith, G. A. K.* iv. 136. t., v. 797; *Renger*, 350; *Licht. Darst.* t. 19. 3 ♀ and jun.

*Cervus leucogaster*, *Goldf. Schreb. Saugth.* 1127.

*Cervus* (*Mazama*) *campestris* (Guazuti Deer), *H. Smith, Griffith A. K.* iv. 136. t. 170, v. 797.

*Mazama campestris*, *Gray, List Mamm. B. M.* 176; *Cat. Osteol. B. M.* 64.

*Blastocerus campestris*, *Gray, Proc. Zool. Soc.* 1850.

*Furcifer campestris*, *Gray, Knowsley Menag.* 58.

*Cervus* (*furcifer*) *campestris*, *Sundevall, Pecora*, 60.

*Cuquacu apara*, *Marcgr. Bras.* vi. 235.

*Biche de Pampas*, *Cuvier, Oss. Foss.* iv. 52.

*Biche de Savanne*, *De la Borde, Buff. Supp.* iii. 126.

*Gouazou-ti*, *Azara, Essai*, i. 77.

*Guazu-y*, *Renger*, 350.

*Guazu'ti*, in *Paragua*.

*Guazu para*, in *Brazils*.

*Hab.* South America; North Patagonia.

Male, female and young. Northern Patagonia. Presented by Sir William Burnett and Capt. Fitzroy, R.N. (Specimens described by Darwin and Waterhouse.)

*OSTEOL.* t. 35. f. 1-3. *Cuvier, Oss. Foss.* iv. t. 3. f. 46 (scarcely f. 47 or 48); *Pr. Max. Abbild.* t.

Horns on frontal bone. Northern Patagonia. From Haslar Hospital Museum. (Capt. Fitzroy's Expedition.)

Skull with horns. "Columbia." The Parzudaki Collection.

*Cervus campestris* is exceedingly abundant, often in small herds, throughout the countries bordering the Plata and in Northern Patagonia. If a person crawling close along the ground slowly advances towards a herd, the deer, frequently out of curiosity, approach to reconnoitre him. I have by this means killed from one spot three out of the same herd. Although so tame and inquisitive, yet when approached on horseback they are exceedingly wary. At Bahia Blanca, a recent establishment in Northern Patagonia, I was surprised to find how little the deer care for the noise of a gun. An overpoweringly strong and offensive odour proceeds from the buck; it is quite indescribable; several times while skinning a specimen I was almost overcome by nausea. I tied up the skin in a silk pocket-handkerchief and so carried it home. This handkerchief, after being well washed, I continually used, and it was of course as repeatedly washed, yet

every time, for a space of one year and seven months, when first unfolded I distinctly perceived the odour. Frequently when passing at the distance of half a mile to the leeward of a herd, I have perceived the whole air tainted with the effluvium. I believe the smell from the buck is most powerful at the period when its horns are perfect and free from the hairy skin; when in this state the meat is of course quite uneatable, but the Gauchos assert, that if buried for some time in fresh earth the taint is removed.—*Darwin, Journal*, 49.

A skull at Haslar has the horns of one side normal, on the other (the left one) with the front lower branch elongated and forked.

The figures of *C. campestris* in F. Cuvier, *Man. Lithog.*, is evidently a *Cariacus*, and not of this genus.

### 3. FURCIFER.

Horns erect, forked, without any basal snag. Ears narrow, acute. Tail short. Fur consisting of thick, rather brittle, waved hairs. Skull with a moderate suborbital pit. There is a distinct parcel of hairs on the inside of the hock, but none on the outer side of the metatarsus. Confined to South America.

They differ from *Capreolus* in wanting the tuft of hair on the outer side of the hind tarsus.

*Cervus*, § *Furcifer*, part., *Sundevall, Pecora*, 60.

*Furcifer*, part., *Gray, Knowsley Menag.*; *Proc. Zool. Soc.* 1850.

*Cervus Mazama*, sp., *H. Smith, G. A. K.*

*Mazama*, *Gray, Cat. Mamm. B. M.* xxvii., not *Rafinesque*.

*Cariacus*, sp., *Lesson, N. Tab. R. A.* 173.

*Chevreuil du nouveau continent* (sp.), *Blainv. Desm. Mam.* ii. 448, 1822.

*Cervus*, sp., *D'Orb. Voy. Amér. Mérid.*

*Hippocamelus*, *Leuckart, de Equo Bisulco*, 1816.

*Camelus*, sp., *Leuckart*.

*Cervequus*, *Lesson, Nov. Tab. R. A.*

*Capreolus*, sp., *Gray, Proc. Zool. Soc.*

*Equus*, sp., *Molina, Chili*, 520; *Fischer, Syn.* 430; *Shaw, Zool.*

*Auchenia*, sp., *H. Smith in Griffith A. K.* v. 764.

### 1. FURCIFER ANTISIENSIS. The TARUSH or TARUGA.

Yellow grey. Hairs rigid, quilled, brown, with a yellow sub-terminal ring. Edge of muffle and throat white. Face with a brown longitudinal streak and a lunate band between the eyes. The hoofs rather broad, worn in front.



*Cervus Antisiensis*, D'Orbigny, *Voy. Amér. Mérid.*; *Dict. Univ.*

H. N. iii. 328; Tschudi, *Faun. Peru*, t. 18.

*Cervus (furfifer) Antisiensis*, Sundevall, *Pecora*, 60.

*Hab.* S. America; Bolivian Alps.

OSTEOLOGY. D'Orb. *Voy. Amér. Mérid.* t. 20. f. 22.

Fur rigid, quilled, grey. Hair brown, with yellow tips. Throat and edge of the muffle white. *Female*: face with a brown longitudinal streak and a lunate band between the eyes. Crumen large. Hock with a large tuft on the inner side. Tail with white soft hair beneath. Mus. Paris.

## 2. FURCIFER HUAMEL. The GUEMUL.

Brown, minutely yellow dotted. Hair long, brittle, waved.

Guemul seu Heumul, *Vidaure, Gesch.*; *Konig, Chili in Neue Samml. von Reiseb. Hamb.* 1782, iv. 87, 88; *Ray, Zool. Univ. & Portat.* iv. 255, 1788.

Gemul or Equus bisulcus, *Molina, Chili*, 520; *Fischer, Syn. Mamm.* 430.

Auchenia Huamel, *H. Smith in Griffith A. K.* v. 764.

Camelus Equinus, *Leuckart*; *Treviranus, Biologie*, ii. 179, 252, 1803.

Hippocamelus dubius, *Leuckart, de Equo Bisulco*, 24, 1816.

Un nouveau genre, *Gay, Echo du Monde Savant*, 1835, June 19; *Lesson, Mamm.* i. 249.

Cervequus andicus, *Lesson, Nov. Tab. R. A.* 173.

*Cervus chilensis* (Guamul), *Gay & Gervais, Ann. Sci. Nat.* 1846, 91.

*Capreolus leucotis*, *Gray, P. Z. Soc.* 1849, 64. t. 12.

*Capreolus?* Huamel, *Gray, Knowsley Menag.* 66.

*Furfifer* Huamel, *Gray, Proc. Zool. Soc.* 1850.

Cloven-footed Horse, *Shaw, Zool.* ii. 441.

Guemul, *Chilians*.

*Hab.* East coast of S. America; Cordillera; Patagonia.

*Female*, imperfect skin. Chili. Presented by the Earl of Derby.

ANAT. *Gay & Gervais, l. c.*

"Skull the size of that of *C. campestris*, but the forehead is flattened; interocular region is squarer. The pit of the tear-bag is more considerable, and the naso-maxillary foramen is smaller."

## 4. CARIACUS.

Horns cylindrical, arched, with a central internal snag, the tip bent forward, and with the lower branches on the hinder edge. Fur soft, of thin hair. Tail moderate, furnished with long hair on the under side, anal disk white. Ears rather elongated, large, rounded. They generally have a tuft of white hair on the outer side of the hind legs, rather below the middle of the metacarpus, but it is sometimes not to be seen. The skull has a very small, shallow, suborbital pit, and the nasal bones are broad and subtriangular behind. The tail is elongate, slender, pale, with the lower part dark, and reaching nearly to the hocks in summer; much shorter and broader, and all dark olive, in the winter. Confined to Northern America.

Mazama, sp., *H. Smith, Griffith A. K.* v. 182; *Lesson, Mamm.* i. 270.

Mazama, *Sundevall, Pecora*, 50.

Cariacus, *Gray, Proc. Zool. Soc.* 1850.

Cariacus, sp., *Gray, Med. Repos.* 1821; *Cat. Mamm. B. M.* xxvii.; *Lesson, N. Tab. R. A.* 173, 1842.

Chevreuils du nouveau continent (part.), *Blainv. Desm. Mam.* ii. 448, 1822.

Mazamadæ, *J. Brookes, Mus. Cat.* 62, 1828.

Elephalcedæ, *J. Brookes, Mus. Cat.* 62, 1828.

\* Hoofs narrow, elongate. Tail hairy beneath.

## 1. CARIACUS VIRGINIANUS. The AMERICAN DEER.

Bright fulvous in summer, greyer in winter. Tail fulvous, above the tip black, beneath white, carried erect when running. Metatarsal tuft large, white, round. Nose brown. Side of mouth white, with an oblique black band from the nostrils. Hoofs narrow, elongate.

Dama virginiana, *Raii Syn.* 86.

Fallow Deer, *Lawson, Carol.* 23; *Catesby, Carol. App.* 28.

Cervus Dama americanus, *Erzl. Syst.* 312.

Cervus Strongyloceros, part., *Schreb. Saugth.* 1074, not figure.

C. Mangivorus, *Schrank, Ann. Wetter.* i. 327, 1819.

Cervus Virginianus, *Gmelin, S. N.* i. 179; *Desm. Mamm.* 442; *F.*

*Cuvier, Man. Lithog. t.*; *Bennett, Gard. Z. S.* 205; *Fischer, Syn.* 449; *Peale, U.S. Explor. Exped.* 39.

C. (Mazama) Virginiana, *Sundevall, Pecora*, 58.

Cariacus virginianus, *Gray, List Mamm. B. M.* 175; *Cat. Osteol. B. M.* 63, 64.

*Mazama Virginiana*, *J. Brookes*, *Cat.* 62, 1828.

Virginian Deer, *Penn. Syn.* 51. t. 9. f. 2; *Quad.* i. 104. t. 11. f. 1.

Cerf de la Louisiane, *Cuvier*, *R. A.* i. 256; *Oss. Foss.* iv. 33. t. 5. f. 1-5.

Cariacou, *Buffon*, *H. N.* xiii. 347. t. 44.

Mexican Deer, *Penn. Syn.* 110. t. 9. f. 1, horns.

*Hab.* N. America.

Female, imperfect, white gland on tarsus very distinct. N. America. Presented by the Earl of Derby.

OSTEOLOGY, t. 33. f. 2, 3.

Chevreuil d'Amérique, *Daub. Buff. H. N.* vi. t. 37; *Cuvier*, *Oss. Foss.* iv. t. 5. f. 19-22.

Cariacou, *Daub. B. H. N.* xii. t. 45.

Cerf de la Louisiane, *Cuvier*, *Oss. Foss.* iv. 33. t. 5. f. 1-16; *Dale*, *Phil. Trans.* n. 444. fig., 1735.

Virginian Deer, *Penn. Hist. Quad.* t. 20. f. 2.

*Var.* Mexican Deer, *Penn. Hist. Quad.* t. 20. f. 1.

Horns of young, simple. North America.

Horns of adults, moderate-sized, with two branches on upper edge of beam. North America.

Horns of adult, large, with three branches on upper edge of beam.

Horns, larger and thicker, with five branches on upper edge of beam, inner basal branch very long and forked.

Horns, very large, with many branches on upper edge of beam, inner basal branch thick and forked. Mexico. From the Royal Society's Museum. (*Cervus mexicanus*.)

Single horn, like the preceding one, but anterior basal branch very long, produced, and an additional elongate branch from the lower edge of the middle of the beam. (*Cervus mexicanus*, Mexican Deer, *Penn. Syn.* 110. t. 9. f. 1; *H. Smith*, *Griffith A. K.* iv. t. 163. f. 3.)

Single horn, with the upper branches on the beam rather irregular, and three produced and elongate, forked branches from the lower edge of the upper part of the beam. (*Cervus clavatus*, *H. Smith in Griffith A. K.* iv. t. 163. f. 4?)

Skeleton. Knowsley. Presented by the Earl of Derby.

Skull, male. Hudson's Bay. Presented by the Hudson's Bay Company.

Skull, female. Hudson's Bay. Presented by the Hudson's Bay Company.

Horns. Hudson's Bay. Presented by the Hudson's Bay Company.

Seven pairs of horns. N. America.

Two skeletons. From the Zoological Society's Collection.

Skull. Hudson's Bay. Presented by the Hudson's Bay Company.

Skull. Hudson's Bay. Presented by the Hudson's Bay Company.

\*Skull. South America. Presented by the Earl of Derby.

The *White-tailed Deer* inhabit the Oregon, and they were found to be most numerous near the coast of the Pacific Ocean. Their range on that coast is up to the fifteenth degree of latitude, and probably much further north. At the Umpqua River, in lat. 43°, they give place to the Black-tailed Deer, *C. Lewisii*, which occupy the country south of that parallel to the almost entire exclusion of these.—*T. Peale, U. S. Explor. Exped.* 38.

We believe that the same species of Deer inhabits all the timbered or partially timbered country between the coast of the Atlantic and Pacific Oceans. They vary in size, as all the animals of this genus do, in different feeding-grounds, but they are specifically the same. When alarmed, this species always erects its tail, which being white beneath, is a conspicuous object, and when running the tail is kept erect and wagged from side to side.—*T. Peale, ibid.* 38.

## 2. ?*CARIACUS MEXICANUS*. The MEXICAN DEER.

Fulvous grey; in winter —? Tail fulvous grey (without hair), half as long as the head. Muzzle fulvous grey, scarcely spotted. Metatarsal tuft evident, brown. Horns broad.

*Aculiame, Hernand. Hist. Nov. Hisp.* 324.

*Cervus mexicanus, Gmelin, S. N.; Licht. Darst. t. 18, ♂ ♀ & jun.; Sundevall, Pecora, 59; Cuvier, Oss. Foss. iv. 37. t. 5. f. 23, horns?*

*Elephalces mexicanus, J. Brookes, Mus. Cat.* 62.

*Hab.* Mexico. *Mus.* Berlin.

## 3. *CARIACUS LEUCURUS*. The LONG-TAILED DEER.

Fur brownish fulvous: does not change in winter or age. Tail yellow above, elongate. Metatarsal tuft small. Nose brown, side of muzzle white, with an oblique black band from the nose to the mouth.

*Roebuck, Dobbs, Hudson's Bay, 41, 1744.*

Fallow or Virginian Deer, *Cook's Third Voyage, ii. 292, 1778.*

Long-tailed Jumping Deer, *Umfreville, Hudson's Bay, 190, 1790.*

Deer with small horns and long tail, *Gass. Journ.* 55, 1808.

Long-tailed Red Deer, *Lewis & Clark, Travels, ii. 41.*

Small Deer of Pacific, *Lewis & Clark, Travels, ii. 342.*

Common Red Deer, *Lewis & Clark, Travels*, iii. 26.

Common Fallow Deer with long tails, *Lewis & Clark, Travels*, iii. 85.

*Cervus leucurus* (Long-tailed Deer), *Douglas, Zool. Journ.* iv. 330; *Richardson, Northern Zoology, Mam.* 258; *Wagler; Sundevall, Pecora.*

*Cervus campestris* (Mazame), *F. Cuvier, Mam. Lithog.* t., not *Desmarest.*

Jumping Deer, *Hudson's Bay Traders.*

*Chevreuil, Canadian Voyagers.*

Mowitch, *Indians west of Rocky Mountains.*

Apeesee-mongsoos, *Cree Indians.*

*Hab.* N. America; Hudson's Bay; Columbia River.

OSTEOLOGY. *a, b.* Skull, male and female. Columbia River. Presented by Hudson's Bay Company.

This species does not, on the east side of the Rocky Mountains, range further north than latitude 54°, nor is it found in that parallel to the eastward of the 105th degree of longitude. Mr. Douglas states, "It is the most common Deer in the district adjoining the River Columbia, more especially on the fertile prairies of the Cowalidske and Multnomah rivers, within 100 miles of the Pacific Ocean."

In running the tail is erect, wagging from side to side. Its gait is two ambling steps and a bound exceeding double the distance of the steps.—*Richardson.*

Dr. Richardson described a female killed in February as fawn-coloured, mixed with black; tail fawn-coloured, white at the tip and beneath. Mr. Douglas, however, described the upper part of the animal as reddish brown in summer, and changing to light grey in winter; so his animal may be a different species.

Skull elongate, narrow. Face rather produced, tapering, flattened on the sides. Intermaxillars rather broad, not reaching to the nasal bones, and fitting into a notch in the front upper edge of the maxilla. Infraorbital pit moderate; fissure very large, triangular, open. Nasals, each notched in the middle of the fronts.

*Male*: length entire 11 inches; from front of orbit to nose 6; width at lower edge of orbit  $4\frac{3}{8}$ ; of nose just before first grinder  $1\frac{1}{2}$ ; of skull 3.

*Female*: length entire  $9\frac{3}{4}$  inches; from front of orbit to nose  $5\frac{1}{4}$ ; width at lower edge of orbit  $3\frac{3}{8}$ ; upper side of orbit  $3\frac{1}{4}$ ; of nose just before first grinder  $1\frac{3}{8}$ ; of skull  $2\frac{7}{8}$ ; suborbital pit rather smaller than in the male.

A male and female in winter dress, from Fort Colville on the Columbia River, were sent by the Hudson's Bay Company to the Museum May 26, 1843: they arrived without hair or skin.

4. *CARIACUS? NEMORALIS*. The *CARIACOU DEER*.

Fulvous grey in winter. Tail above blackish (without the hair), half as long as the head. Nose brown. Muzzle white, with a black oblique streak from nose to mouth. Metatarsal tuft minute, obsolete. Ears covered externally with very short greyish hair.

*C. Nemoralis* (*H. Smith?*), *Sundevall, Pecora*, 59.

Cerf blanc ou Cerf des Paletuviers, *Cuvier, Oss. Foss.* iv. 36. t. 5. f. 22 a.

Chevreaux d'Amérique, *Daubent. Buffon H. N.* vi. t. 37; *Cuvier, Oss. Foss.* iv. 36. t. 5. f. 19-22.

*Cervus mexicanus*, part., *Pennant, Quad.*, from *Buffon*.

Biche des Savannes, *La Borde, Buffon H. N. Supp.* iii. 126; "young in winter," *Cuvier, l. c.*

Biche des Paletuviers, *La Borde, Buff. H. N. Supp.* iii. 126; "adult male," *Cuvier, l. c.*

*Hab.* Shores of Mexican Gulf; Guiana; Mexico. Cayenne; *M. Poiteau*. Surinam; *M. Baillon*.

5. *CARIACUS PUNCTULATUS*. The *CALIFORNIAN ROE*.

Dark reddish brown (in summer), minutely punctulated by the yellow tips of the hair; in winter greyish brown. Chin-mark distinct. Ears elongated, nakedish. Base of the ears, orbits, round the muzzle, underside of tail, and the upper part of the inside of the legs, white. Forehead, line down the face, and narrow streak on upper part of the nape, black. Legs brown. A very narrow, indistinct streak on the middle line of the rump yellowish. Metatarsal tuft none. Tail like back, with a blackish tip.

*Cariacus punctulatus*, *Gray, Proc. Zool. Soc.* 1850, t.

*Hab.* California. Lieut. Jones of H.M.S. 'Samson.'

There is a female of this species in the Zoological Gardens; it is much smaller and darker than *C. Virginianus*, and it differs in the hair being dark, with a distinct, yellow, subterminal band.

*Cervus gymnotis* is described as very like *C. nemoralis*, only differing in the tail being rather longer and pale above; the outer surface of the ears brown and nakedish. Metatarsal tufts none.

*Cervus Gymnotis*, *Wiegmann, Isis*, 1833; *Wagner, Supp.*; *Sundevall, Pecora*, 39.

*Hab.* Columbia. Mus. Berlin. Doubtful if distinct from the former or *C. nemoralis*.

## 6. CARIACUS LEWISII. The BLACK-TAILED DEER.

The tail black above towards the extremity, yellowish white beneath, covered with hair at all seasons, and not carried erect when running. Fulvous (in summer). Hair very soft, not rigid. Forehead and upper part of face before the eyes blackish. (In winter, fur very thick, quilled, waved, brittle.) Inside of the legs and belly white. Chin-band distinct, black. Front hoofs narrow, elongate. Horns like *C. Virginianus*, but generally more slender, and commonly without the basal antler.

Black-tailed Deer, *Anglo-American in Oregon*.

Black-tailed Fallow Deer, *Lewis & Clark, Travels to the Pacific*, iii. 26. 125 (London edit. 1807).

*Cervus Macrotis*  $\beta$ . Colombiana, *Richardson, Fauna Bor. Amer.* i. 257.

Long-tailed Deer (*Cervus macrourus*), *H. Smith, Griffith A. K.* iv. 134, v. 795, part.; *Fischer, Syn.* 615; *Blyth in Cuvier Animal Kingd.* 138. f. 56.

*Cervus Lewisii*, *T. Peale, U. States Explor. Exped.* 39. t. 9, ined. fig. at p. 43, fore-foot.

*Hab.* California, between Columbia River and Umpqua River; seldom seen east of the Cascade range of mountains.

OSTEOLOGY. *a, b.* Skull, male and female. Columbia River. Presented by the Hudson's Bay Company.

The *Short or Black-tailed Deer* in the winter is covered with very thick, waved, tubular, brittle quills or hair, of a grey colour, with a rather darker subterminal band. The legs are yellow brown. The tuft on the inside of the hock very large. The tuft on the outside of the tarsus large, covering an oblong, bald, callous spot, about an inch or an inch and a half long, which is hard and horny in the dry specimen.—*T. Peale*.

Skull rather broad. Forehead concave. Face rounded on the sides. Intermaxillars broad, not reaching to the nasal. Nasal dilated and bent down on the side behind, with a deep central notch. Suborbital pit large, deep, triangular. Suborbital slit large, triangular, open.

*Skull of Male*: Larger. Suborbital pit very large, triangular, deep. Intermaxillar not reaching near the nasal. Length entire  $12\frac{3}{4}$  inches; from front of orbit  $6\frac{1}{4}$ ; width at lower side of orbit  $5\frac{1}{4}$ ; upper side of orbit  $5\frac{1}{2}$ ; of nose just before first grinder  $2\frac{5}{16}$ ; of skull  $3\frac{3}{4}$ .

*Skull of Female*: Smaller. Suborbital pit smaller, narrower, oblong, linear, rather deep. Intermaxillar reaching nearly to the nasal. Length entire 11 inches; from orbit  $6\frac{1}{2}$  inches; width at lower side of orbit  $4\frac{1}{8}$ ; at upper side  $3\frac{1}{8}$ ; of nose just in front of first grinder  $2\frac{5}{16}$ ; of skull  $2\frac{1}{16}$ .

Length 6' 1½"; tail 10"; height at shoulders 3' 2"; glandular sac on tarsus 1½ inch long.

Male and female winter dress was sent from Fort Colville, Columbia River, May 26, 1843, by A. Macdonald, Esq., and presented by the Hudson's Bay Company, but arrived without hair.

The Black-tail Deer never carries its tail erect when running, and viewed from behind shows two narrow white lines of hair, instead of the large, white, and elevated tail of the Virginian Deer.

*Var. 1.* With a basal antler on the inner side of the horn, which was directed upwards and backwards.

*Hab.* Oregon; *T. Peale*, l. c. 41.

*Var. 2.* No internal basal antler.

*Hab.* California; *T. Peale*, l. c. 41.

There is a skull of a young male American Deer which was in the Zoological Gardens, the skin of which has not been preserved. It is intermediate in character between the other species; it has the rather slender face of the Virginian Deer; but it has a much larger, subtriangular, suborbital pit, of the same form, but only about two-thirds the size of the pit in the skull of the broad-faced *Long-tailed Deer*. It indicates the existence of another species, that may be characterized by the skull. Nasals: each bifid in front. Intermaxillar nearly reaching to the nasals. The length entire 9½ in.; of face from orbits 5½ in.; width of lower edge of orbit 4½ in.; of upper edge of orbit 3½ in.; of face in front of the first grinder 1½ in.; of skull 2½ in.

**\*\* Front hoof broad, cordate. Tail not hairy beneath.**

## 7. CARIACUS MACROTIS. THE MULE DEER.

Brownish fulvous. Chin without any, or only an indistinct band. Tail pale ferruginous, with a black tuft at the end, and without any hair beneath. Ears very large. Hoofs of the fore feet broad, cordate, nearly as broad as long, flattened and concave beneath. Horns larger and more spreading than in *C. Virginianus*.

*Var.?* Jumping Deer, *Umfreville*, *Hudson's Bay*, 164.

Black-tailed or Mule Deer, *Gass. Journ.* 55; *Lewis & Clark*, i. 91, 92, 106, 152, 239, 264, 328, ii. 152, iii. 27, 125; *James, Long's Exped.* ii. 276; *Godman, Nat. Hist.* ii. 305.

Mule Deer, *Warden, United States*, i. 245.

Cerf Mulet, *Desm. Mamm.* 443, notes.

Le Daume fauve à queue noire, *Warden, Etats Unis, ed. Gall.* 640.

Mule Deer, *Anglo-Americans of the Rocky Mountains*.



? Mule or Black-tailed Deer, *Le Raye; Lewis & Clark, Travels; Wied, Voy. Amér. Mérid.* iii. 273, & vig. A, B.

*Cervus macrotis*, *Say, Long's Exped. Rocky Mount.* ii. 88. 254; *H. Smith, Griffith A. K.* v. 794; *Fischer, Syn.* 444. 615; *Sundevall, Pecora*, 59; *Richardson, Faun. Bor. Amer.* 254. t. 20; *Peale, U. St. Expl. Exped.* 41. t. 10. ined. fig. at p. 43, forefeet; *Sabine, Franklin Journ.* 667; *Harlan, Fauna*, 243 (Great-eared Deer); *H. Smith in Griffith A. K.* iv. 133, v. 794 (Black-tailed Deer).

*C. auritus*, *Warden, Etats Unis, ed. Gall.* v. 640; *Desmoul. Dict. Class. H. N.* iii. 379.

*Hab.* Arkansas; Rocky Mountains; on rocky hills covered with trees.

Rather larger than *Cervus Virginianus*, and having more the general aspect of the *Wapiti*; destitute of the black submaxillary marks which are always present on *C. Lewisii* and *C. Virginianus*. Horns larger and more spreading. Hoofs rounded, the under surface concave. Tail pale ferruginous, destitute of hair beneath, and having a tuft of black hair at the extremity. In summer pale ferruginous, darkest on back. Chin, throat, and inside of thighs and belly, white. Hair flattened and undulated. Total length 67 in.; tail  $7\frac{1}{2}$  in.; height at shoulders 36 in.—*T. Peale*.

This species is most abundant on the eastern slope of the Rocky Mountains, and delights in rocky hills covered with cedars and pine-trees. By the flattened and concave formation of the hoofs, they are enabled to climb the rocky steepes with much greater facility than other species of Deer, and for the same reason we infer that they are more at ease in the snowy regions of the mountains.—*T. Peale, l. c.* 43.

Mules between *Cervus Virginianus* and *C. gymnotis* have been described.—*Pucheran, Comptes Rendus, Acad. Sci.* 1849, 774.

According to *M. Pucheran*, the chief difference between *C. Virginianus* and *C. gymnotis* is, that the former has the chest and belly white, and *C. gymnotis* the belly white and the chest brown.

### Doubtful Species.

1. The Cariacou Deer, *Cervus nemoralis*, *H. Smith in Griffith A. K.* iv. 137. t. . & v. 798; *Fischer, Syn.* 617, described and figured from a pair said to come from Virginia, and is also said to inhabit Honduras (see p. 138). It appears by the figure of the horns rather to belong to this genus than to *Coassus*. It is a species yet to be identified. Professor Sundevall regards it as a species of *Cariacus*.

2. *Cervus spinosus*, Gay & Gervais, *Ann. Sci. Nat.* 1846, 94, from horn of *M. Poiteau*, figured Cuvier, *Oss. Foss.* iv. t. 5. f. 22 a.

*C. virginianus* var., G. Cuvier, *Oss. Foss.*

*Hab.* Cayenne; *M. Poiteau*.

Only described from a single horn from Cayenne.

3. *Cervus Savannarum*, Cabanis & Schomburgk, *Reisen in Britisch Guiana*, iii. 785.

4. *Orenoka Deer*.—There is imported into London under the above name, from Central America, the flat skins of a large species of Deer, of a bright dark red brown colour, with the chin and under part of the body white, and a blackish tail. The hair of the back is short and rather adpressed. The animal appears to be about the size of a small Stag, *C. Elaphus*. These skins are imported by the North-West American Fur Company to be tanned into leather.

5. *The Yutacan Deer*.—The North-West American Fur Company import, under the above name and from Yutacan, the skin of a smaller Deer, about the size of the *Virginian Deer*. The fur of the back is very short, of a red brown colour with blackish tips. They differ from the skins of the *Virginian Deer*, imported by the same Company from different parts of America, in the shortness and greater stiffness of the hair.

6. *Cervus affinis*, Pucheran, *Compt. Rendus, Acad. Sci.* 1849, 777, not Hodgson.

Hair very short, close-pressed, grey, minutely white grised.

*Hab.* ——. Mus. Paris.

7. *Cervus Guidotii*, Gay & Gervais, *Ann. Sci. Nat.* 1846, 94.

Horns lyrate, half the size of those of *C. axis*, and with only a single basal posterior snag.

*Hab.* New Grenada; *M. Justin Guidot*. Horns in Mus. Paris.

These two species are only known from the above descriptions.

#### B. Horns simple.

*Subulidæ*, J. Brookes, *Mus. Cat.* 62, 1828.

Les Daguets, *Blainv.*; Lesson, *Man. Mam.*

#### 5. COASSUS.

Horns simple, rudimentary, shelving back. Ears short, broad, rounded, nakedish. Tail short. The facial line rather convex. The fur short, of the forehead (in both sexes) elongate, forming a

rhombic tuft between the horn and face. Legs without any tuft on the outer sides of the metatarsus, but with a pencil on the inside of the hocks. Skull with a very small, shallow, suborbital pit, and supraorbital foramen in a groove. Confined to South America.

They all emit a strong odour like porcupines. They cast their horns like the other Deer.

Coassus, § 1. Coassus, *Gray, Proc. Zool. Soc.* 1850.

Subulo, *H. Smith, Griffith A. K.* v. . 1827.

Subula, *Lesson, Mamm.* i. 273; *Nov. Tab. R. A.* 174.

Subulus, *J. Brookes, Cat. Mus.* 62, 1828.

Coassus, *Gray, Med. Repos.* 1821; *Cat. Mamm. B. M.* xxvii.

Daguets, sp., *Blainv. Desm. Mam.* ii. 449, 1822.

Cervus, sp., *Renger, 343.*

\* *Skull face rather elongate. Suborbital pit large.*

# 1. COASSUS NEMORIVAGUS. The GAUZU-VIVA.

Pale brown. The hair dirt-coloured brown, with a yellow subterminal band which wears off; a paler spot over the eye.

Young: Brown, white spotted, spots of sides unequal. Nape dark.

Skull elongate. Suborbital pit broad, subtrigonal, shallow.

Grinders moderate. Infraorbital ridge very distinct, sharp-edged.

Intermaxillars not reaching to the nasal, but fit into a notch in the maxilla.

Cervus nemorivagus, *F. Cuvier, Dict. Sci. Nat.* vii. 485; *Cuv.*

*Oss. Foss.* iv. 54. t. 5. f. 50; *Fischer, Syn.* 446. 618; *H. Smith,*

*G. A. K.* iv. 142. t.; *Sundevall, Pecora,* 60; *Licht. Dargst.* t. 21.

Coassus nemorivagus, *Gray, Proc. Zool. Soc.* 1850; *Mammalia,*

t. 1, t. 2. f. 1; *List Mamm. B. M.* 174; *Cat. Ost. B. M.* 64.

Cervus nemorum, *Desm. Mamm.* 446.

Cervus simplicicornis, *Illiger, Pr. Max. Abbild.* t.; *H. Smith,*

*G. A. K.* v. 800. t.; *R. Schomburgk, Reisen in Britisch Guiana,*

iii. 785; *Renger, 269.*

Cervus mangivorus, *Schrank, Wett. Trans.* iv. 326.

Cuguacu-Apara, *Marcg. Bras.* vi. 235.

Young! Moschus delicatulus, *Shaw, Mus. Lever.* t. 36.

Guazu-viva, *Renger, 369.*

*Hab. Brazils.*

a, b. Females. Brazils.

c. Young, with a distinct line of white spots on middle of the back; sides spotted. Brazils.

Tragulus Surinamensis, *Klein. Moschus Americanus, Erxl.*

M. delicatulus, *Shaw, Mus. Lever.* t. 36; *Seba, i. t. 44. f. 2.*

d. Male, adult. Brazils.

## ANAT.

*C. nemorivagus*, *Cuvier, Oss. Foss.* iv. 54. t. 5. f. 50.

*e, f.* Skull. Brazil.

*Var. 1.* Dark brown. Streak on each side of the forehead, upper part of the legs, and spot on the angle of the lower lip, blackish; streak over the eye yellowish. Under lip, a spot on upper lip near muzzle, under side of tail, and inner side of the upper part of the thighs, white. Muffle smooth, black, with the upper edge slightly arched. Ears small, lower half of the inner side black. Size of a full-grown Roebuck.

*Coassus nemorivagus*, *var. a*, *Gray, Proc. Zool. Soc.* 1850, t. , male.

*Hab.* Brazil; Knowsley Menag.

*Var. 2. Female.* "Dark grey, tinged with brown, greyer on the head and neck; the lower part, and the inside of legs, the belly, and round the eyes, rust-coloured; the purple brown patch in the ears smaller and less distinct than in *C. rufus*. A small white stripe in front of the eyes, and the under surface of the tail white. From the eyes to the nose short and thick compared with the other specimens. A female."—*Frazer, MSS.*

*Coassus nemorivagus* *var.*, *Gray, Proc. Zool. Soc.* 1850, t. , & t. . f. .

**\*\* Skull face short, broad. Suborbital pit small.**

## 2. COASSUS RUFUS. The CUGUACU-ETE or PITA.

The fur bright shining red. Crown and neck, sides of face and chest, paler. Muffle carunculated, rather angularly produced above.

Skull: infraorbital pit triangular, small, slightly impressed. Intermaxillary scarcely reaching to the skull, elongate. Nasal bone only slightly dilated behind. Supraorbital foramen large, in a deep groove. Grinders moderate. Cutting-teeth very narrow, two central much dilated.

*Young*: Reddish, white spotted, spots of sides unequal. Nape with a distinct, white-edged, dark central streak.

*Var.* with white rings above the hoofs.

*Cervus rufus*, *F. Cuvier, Dict. Sci. Nat.* vii. 485; *Cuvier, Oss. Foss.* iv. 53. t. 3. f. 41, 42, t. 5. f. 44; *H. Smith, G. A. K.* iv. 140. t.; *Fischer, Syn.* 446, 618; *Licht. Darst.* t. 20; *Sundevall, Pecora*, 60; *R. Schomburgk, Reisen in Britisch Guiana*, 784; *Pr. Max. Abbild.* t.; *Renger*, 356.

*Coassus rufus*, *Gray, List Mamm. B. M.* 174; *Cat. Osteol. Sp.*

64; *Knowsley Menag.*; *Proc. Zool. Soc.* 1850; *Mammalia*, t. 2, t. . f. 2.

*Cervus simplicicornis* (Apara  $\beta$ .), *H. Smith, Griffith A. K.* iv. 141. t.

*Cervus dolichurus*, *Wagner, Supp.* iv. 389.

*Subulus americanus*, *J. Brookes, Cat. Mus.* 62, 1828.

*Cariacou de la Guyane*, *Buff.* ix. 90.

*Biche rouge*, *Buffon, Supp.* iii. 126.

*Gouazou-pita*, *Azara.*

*Guazu-pyta*, *Renger*, 356.

*Hab.* South America.

Young, in spirits? S. America.

Male and female. S. America.

ANAT. t. 35. f. 4.

*Cervus rufus*, *Cuvier, Oss. Foss.* iv. t. 3. f. 41, 42, horns; t. 5. f. 44, skull.

Skeleton, male. From Mr. Brandt's Collection.

Skull. Para, South America. Presented by R. Graham, Esq.

Skull of young. S. America.

### 3. COASSUS SUPERCILIARIS. The EYE-BROWED BROCKET.

Bright shining red, with neck and head grey, forehead darker. Hocks and front of fore legs grey. Stripe in front of the eye, and under surface of the tail, white. Muffle slightly arched above. Ears moderate.

*Coassus superciliaris*, *Gray, Gleanings Knowsley Menag.* t. 48\*; *Proc. Zool. Soc.* 1850; *Mammalia*, t. , t. . 45.

*Hab.* Brazils.

This species chiefly differs from the former in the form of the muffle, and in the presence of the white streak over the eyes. There is a male at Knowsley, t. , t. ; and a pair in the Gardens of the Zoological Society, t. . f. 5.

### 4. COASSUS AURITUS. The LARGE-EARED BROCKET.

Bright pale red brown. Head and neck grey. Orbits pale brownish. Spot on side of upper lip, chin, belly, hinder side of fore, and front side of hinder thighs, and under side of tail, white. Crown dark grey brown. Ears very large, broad, acute, more than half the length of the head, with two lines of hairs within.

*Coassus auritus*, *Gray, Proc. Zool. Soc.* 1850; *Mammalia*, t. , t. . f. 6.

*Hab.* Brazils?; Knowsley and Gard. Zool. Soc.

There is a female of this species in the Gardens of the Society; it greatly resembles the Indian Muntjac in the distribution of its colour.

In the British Museum there are two skulls which belong to the species of this division. They have the face shorter and thicker than the skull of *C. nemorivagus*, and the nasals are wider behind; the suborbital pit small or less compressed, and the grinders larger. The first belongs to a young specimen in the Museum Collection apparently of *C. rufus*; it has a small, slightly impressed pit just in front of the edge of the orbit. The second belongs to a more adult female, without any skin, sent from Pará by Mr. Reginald Graham; it is considerably larger than the preceding, and there is scarcely any visible impression in front of the orbit, only a slight concavity of the general surface.

*Cervus nanus*, Lund; Lesson, N. Tab. R. A. 173, 1842 (not described?).

*Hab.* Brazils. May be one of the preceding.

## 6. PUDU.

Horns simple, rudimentary, shelving backwards. Ears rounded, thickly covered with short hair. Head short; facial line convex. The crown with a tuft of long hair. Crumen distinct. Fur short. Legs with a tuft of hair on the inside of the hocks, without any tuft on the outer side of the tarsus. Tail short. Skull short, high. Infraorbital impression oblong, very deep. Nasal bones much dilated behind on side of nose. Intermaxillary short, not reaching near to the nasal. Cutting-teeth rather narrow, two central rather dilated. Grinders very large. Supraorbital foramen small, scarcely forming a groove. Confined to the west coast of America.

Coassus, § 2. Pudu, Gray, Proc. Zool. Soc. 1850.

*Cervus*, sp., Bennett.

*C.* § *Capreolus*, sp., Lesson.

*Capra*, sp., Molina.

Antilope, sp., Blainville.

Antilocapra, sp., Lesson.

## 1. PUDU HUMILIS. The VENADA.

Brown black and pale grised. Neck blackish brown, punctulated with white. Lips, orbit, ears, legs, and under part of body, bright pale bay. Throat and inner side of thighs paler. Hair of back with a broad, blackish, subterminal band and pale brown

tips. Tail very short. Ears moderate, covered with short, close-set hair. Face dark. Crown dark red brown.

*Cervus humilis*, *Benn. Proc. Zool. Soc.* 1831, 27, fem.; *Sundevall, Pecora*, 60; *R. Schomburgk, Reisen in Britisch Guiana*, iii. 786.

*Cervus* (*Capreolus*?) *humilis*, *Lesson, N. Tab. R. A.* 172, 1842.  
*C. rufus*, *Wagner, Supp.* iv.

*Capra Pudu*, *Molina*.

*Chevreuil* (de Chili), *Pöppig, Froriep's Notiz.* 1829; *Férussac, Bull. Univ.* xix. 95, 1829.

*Cervus Pudu*, *Gay & Gervais, Ann. Sci. Nat.* 1846, 90.

*Antilope* (*Rupicapra*) *Pudu*, *Blainv. Bull. Soc. Phil.* 1816, 76;  
*Gervais, Dict. Sci. Nat. Supp.* i. 264.

*Antilocapra Pudu*, *Lesson, Nov. Tab. R. A.* 182.

*Antilope Dicranocerus Temamazama*, *H. Smith, Linn. Trans.* xiii. 36; *Griffith, A. K.* ii. 866; *Fischer, Syn.* 482, 647.

*Mazame*, *Hernand. Mex.* ix. 14, 324; *Seba, Thes.* i. 69. t. 42. f. 3.

*Cervus Macatlicheltic*, *Seba, Thes.* i. 69. t. 42. f. 4.

*Hab.* Chili, Conception and Chiloe; *King*.

A male. Chili. From the Zoological Society. (The specimen described by Mr. Bennett.)

*ANAT.* *Gay & Gervais, Ann. Sci. Nat.* 1846, 90.

*Skull.* Chili. (The specimen described by Mr. Bennett.)

#### Tribe 4. MOSCHINA.

Cutting-teeth none above. Horns none. The hinder edge of the metatarsus more or less naked. False hoofs distinct.

*Moschus*, *Linn. Syst. Nat.*; *Cuvier, Règn. Anim.*; *F. Cuv. Dict. Sci. Nat.* lix. 513, 1829.

*Camelinia*, part., *Rafin. Anal. Nat.* 55, 1815.

*Moschidæ* seu *Ecornis*, *J. Brookes, Mus. Cat.* 60, 1828.

*Moschidæ* (part.), *Ogilby, P. Z. S.* 1836, 135.

*Inermia*, part., *Latr. Fam. Nat. R. A.* 62, 1825.

*Moschina*, *Gray, Ann. Phil.* 1825; *Cat. Mamm. B. M.* xxvii. 172, 1843; *Selys Longchamps*, 1842.

*Ruminantia c. acerrata*, part., *Bronn, Index Palæont.* ii. 710.

*Les Chevrotains*, *F. Cuv. Dict. Sci. Nat.* lix. 513, 1829; *Dent. Mam.* 230. t. 93\*.

*Moschisidæ*, *Lesson, Nov. Tab. R. A.* 175.

The only character by which the *Musks*, as established by Linnæus and others, differ from the genus *Cervus*, consists in the absence of horns, for the elongated canines are common to it and most of the Indian species of *Cervus*, especially the *Cervus Muntjac*.

## SYNOPSIS OF THE GENERA.

- I. *Fur erect, elastic, thick. Throat and hinder edge of tarsus hairy. Males with an odoriferous gland. Young spotted.*
1. **MOSCHUS.** Canines of males very long.
- II. *Fur close-pressed. Throat and hinder edge of tarsus bald. Males without any odoriferous gland. Young coloured like the adult. Throat white streaked.*
2. **MEMINNA.** Throat hairy. Hinder edge of metatarsus covered with hair, naked on the outer side near the heel. Body spotted. Intermaxilla elongate.
  3. **HYEMOSCHUS.** Chin and lips nakedish. Hinder edge of metatarsus hairy, naked on the outer side near the heel. Intermaxilla very short.
  4. **TRAGULUS.** Throat and chin nakedish. Hinder edge of the metatarsus naked, callous. Fur soft. Intermaxilla elongate.
- I. *Fur elastic, thick, brittle. Throat and hinder edge of the tarsus covered with hair. Males with an odoriferous gland.*

1. **MOSCHUS.**

Muffle naked. Crumen none. Throat covered with hair. Fur very elastic, formed of erect, spreading, closely-packed, elastic, brittle, tubular, waved hair. Hinder edge of the tarsus covered with hair. Hoofs small, compressed, narrow, triangular, acute; false hoofs elongated, well-developed. Tail very short, rudimentary. Males with a large pouch, secreting *musk*, in the middle of the abdomen, and with a celluliferous and netted gland on the outer side of the thighs, secreting a serous fluid (see *Brandt, Act. Acad. Petersb.* 1836; *Ann. Anat. & Phys.* 1837, 283). Young spotted, which are often obliterated in the adult.

*Moschus*, Gray, *P. Z. Soc.* 1846; *Knowsley Menag.*; *List Mamm. B. M.*

*Moschus*, sp., *Linn. S. N.* ed. 6. 13. 1748, ed. 10. 66. 1758, ed. 12. 91. 1766; *Erzleb. S. A.* 319, 1777; *Storr*, 1780.

*M. Moschiferus*, *Illiger*, 1811; *Lesson, Nov. Tab. R. A.* 175.

*Tragulus*, sp., *Brisson, Reg. Anim.* i. 67, 1762.

The Musk are confined to the snowy regions, amid the glassy precipices of which they leap with a power and security far more than *Caprine*, though, owing to the unequal length of their legs, they can descend slopes only with difficulty, and falling are caught; they cannot climb at all as *Goats* do, and are solitary. They rut in winter, and produce young in May or June,



gestating 160 days. In six weeks the young can shift for themselves, and the mother drives them off. They can procreate ere they are a year old, and live ten or fifteen years. One is usually produced at a birth, in cavities of the rocks. Gall-bladder constant.

The *tail-gland* of the Musk is very large, and covers the whole tail nearly, and has a linear, longitudinal pore on each side, and an abundant secretion.

The preputial gland of the Musk is analogous to that of the Civets and the Screw-tail (*Paradoxurus*); it is placed on the prepuce, the penis opening in the midst of it: this organ is clearly subservient to sexual purposes, and so probably are several others, though the eye-pits have been variously referred to the facilitation of breathing and of smelling. The supposed end of the interdigital glands and pores, or feet-pits, viz. the lubrication of the feet and preservation of the hoofs in hot sandy deserts, is clearly erroneous, since the *Thar* has these organs of enormous size in all the four extremities, though it be the tenant of moist, cool mountain forests. It is probable that the secretion from the foot-pores enables these animals to find one another in those wildernesses of vast forest-trees and dense undergrowth which constitute their range.—*Hodgson*.

The *Musk* is said to derive its peculiar odoriferous secretion from feeding on the Kastooree plant, a kind of ground-nut which is strongly impregnated with the same pungent scent, and which the animal digs up with its long tusk.—*Ogilby in Royle, Himal. i. lxxi.*

# 1. MOSCHUS SIBIRICUS. The KUBARGA.

Ash brown, beneath paler. Throat black or ashy, with a definite white streak on each side.

Animal Moschiferum Kubarga dicta, J. G. Gmelin, Nov. Com. Petrop. iv. 393.

Moschus Sibiricus, Pallas, Spic. Zool. xiii. 29. t. 4, 5, 6; Gray, Cat. Mamm. B. M. 172; List Osteol. Spec. 63; Knowsley Menag.

Moschus moschiferus, Schreb. Saugth. 944. t. 242, 242 a; Shaw, Lever. Mus. i. t. 3?; Wrangle's Siberia, 374.

Moschus moschiferus var. Altaici, Sundevall.

Moschus Altaicus, Eschsch. Jobst. Isis, 1830, 606; Fér. Bull. Sci. xxii. 46.

Hab. Siberia; Altai Mountains; Lake Baikal; Gmelin. Borders of Arctic Ocean; Wrangle. Mongolia, Eschsch.

Male and female. Siberia. From the Museum of the Royal Academy of Petersburg.

## OSTEOLOGY.

Skull of male. Siberia. From the Museum of the Royal Academy of St. Petersburg.

Skull of female. Siberia. From the Museum of the Royal Academy of St. Petersburg.

The Musk Deer are found nearly to the arctic circle; they are abundant near Verkhoiansk in North Siberia (Lat.  $67^{\circ} 7'$ , E. Long.  $134^{\circ}$ ), and called *Kabarga*. A pound of musk is commonly sold from 10 to 15 roubles.—*Wrangle's Siberia and Polar Sea*, by Sabine, 374, 1844.

## 2. MOSCHUS MOSCHIFERUS. The MUSK.

Dark brown, chest and belly rather paler. Throat and chest with indistinct, pale cross bands.

*Moschus moschiferus*, Linn. S. N. i. 91; Gray, *List Mamm. B. M.* 172; *List Osteol. Sp. B. M.* 62, 63; *Last Hodgson Collection*, 30.

*Animal moschiferum*, Raii *Quad.* 124; *Caleot. Mus.* 661. t. 666. *Capreolus Moschus*, Gesner, *Quad.* 695; *Jonston, Quad.* 55. t. 39. *Capra moschus*, Aldrov. *Bisulc.* 743.

*Muskus*, &c., Ysbr. *Reis.* 45. fig.

*Musk*, Buffon, *Hist. Nat.* xii. 361, *Supp.* vi. 221. t. 29.

*Moschus*, Schræk. *Monag.* t. 44.

*Caprea moschifera*, Seger. *Misc. Acad. Nat. Cur.* i. 169. *Obs.* 128. t. 11.

*Tragulus moschiferus*, Klein.

Tibet Musk, Penn. *Syn.* 56. t. 10. f. 1; *Quad.* i. 112. t. 12. f. 1.

*Moschus saturatus*, Hodgson, *J. Asiat. Soc. Bengal*, viii. 203, x. 795. t. , xi. 285.

*Moschus Kacharensis*, Hodgson, *Cat. MSS.* v. t. 3.

*Moschus Moschus* var., Ogilby in Royle, *Himal.* i. LXXI.

Musk?, Falconer, *Journ. Asiat. Soc.* iv. 710.

*Hab.* Thibet; Nepal.

Male (in bad state). India. Presented by Gen. Hardwicke.

A flat hunter's skin. India. Presented by Gen. Hardwicke.

Male (in bad state). India.

Female. Nepal. Presented by the Hon. East India Company.

Nepal. Presented by B. H. Hodgson, Esq.

Two specimens from Nepal. Presented by B. H. Hodgson, Esq.

A male, brownish and dark. Nepal. Presented by B. H. Hodgson, Esq.

A male, with a dark streak on the nape, and a large dark spot between the shoulders. Nepal. Presented by B. H. Hodgson, Esq.

A flat skin without skull, blackish, with rows of pale spots. Nepal. Presented by B. H. Hodgson, Esq.

**OSTEOLOGY.** *Hodgson, J. A. S. Beng.* x. 795. t.

Skull of male. Nepal. Presented by B. H. Hodgson, Esq.

Skull of female. Nepal. Presented by B. H. Hodgson, Esq.

Skeleton, wanting bones of feet. Nepal. Presented by B.

H. Hodgson, Esq.

Skeleton, wanting bones of feet. Nepal. Presented by B.

H. Hodgson, Esq.

Skeleton, wanting bones of feet. Nepal. Presented by B.

H. Hodgson, Esq.

Skull. Nepal. Presented by B. H. Hodgson, Esq.

Skulls of male and female. Nepal.

Two skeletons, wanting bones of the feet. Nepal.

**ICON.**

Drawing of skull of male.—*Hodgson, Icon. ined. B. M.* t. 186. f. 5, 6.

Drawing of young male.—*Hodgson, Icon. ined. B. M.* t. 188. f. 1.

Drawing of male and female.—*Hodgson, Icon. ined. B. M.* t. 189.

Drawing of female.—*Hodgson, Icon. ined. B. M.* t. 192. f. 1.

Musk.—*Hardw. Icon. ined. B. M.* n. 10,974. t. 82, t. 83, skull.

**3. MOSCHUS LEUCOGASTER. The WHITE-BELLIED MUSK.**

Dark brown. Throat, chest, belly, and inside of the ears, pure white.

*Moschus leucogaster*, *Hodgson, Journ. Asiat. Soc. Bengal*, viii.

203, x. 914, xi. 285; *Gray, Cat. Mamm. B. M.* 172; *Cat.*

*Hodgson Collection in B. M.* 31.

*Moschus niveiventer*, *Hodgson, Icon. ined. B. M.* n. 188, 190, 193.

*Hab.* Nepal.

Nepal. Presented by B. H. Hodgson, Esq.

A male and female.

An imperfect flat skin of a female, rather darker (like a bleached specimen of *M. saturatus*).

**ICON.**

Drawing of young male.—*Hodgson, Icon. ined. B. M.* t. 188. f. 2.

Drawing of male, female and young.—*Hodgson, Icon. ined. B. M.* t. 190.

Drawing of female.—*Hodgson, Icon. ined. B. M.* t. 193. f. 3.

**4. MOSCHUS CHRYSOGASTER. The GOLDEN-EYED MUSK.**

Grey brown. The ears, orbits, throat, chest, abdomen, and inner sides of the legs, brilliant yellow.

*Moschus chrysogaster*, Hodgson, *Journ. Asiat. Soc. Bengal*, viii. 203 (1839), x. 914, xi. 285; Gray, *Cat. Mamm. B. M.* 172; *Cat. Hodgson Collection in B. M.* 31; *List Osteol. B. M.* 63.  
*Moschus moschiferus* var., Sundevall, *Pecora*, 118.  
*Hab.* Nepal.

Two specimens. Nepal. Presented by B. H. Hodgson, Esq.

OSTEOLOGY, t. 25. f. 1.

Skull. Nepal. Presented by B. H. Hodgson, Esq.

Skull. Presented by B. H. Hodgson, Esq.

ICON.

Drawing of male and female.—Hodgson, *Icon. ined. B. M.* t. 191.

Drawing of female.—Hodgson, *Icon. ined. B. M.* t. 192. f. 2.

II. *Fur close-pressed. Throat and hinder edge of the tarsus more or less naked. Males without any peculiar odoriferous gland. Throat white streaked. Young coloured like the adult.* Pigmy Musks.

Pigmy Musks, Gray, *Knowsley Menag.*

## 2. MEMINNA, Gray.

Throat entirely covered with hair. Fur white, striped and spotted. The legs are short and rather stout. The hinder edge of the metatarsus covered with hair, but on its outer side, a little below the hock, a rather large, smooth, naked prominence, red when alive.

*Meminna*, Knox; Gray, *Cat. Mamm. B. M.* xxvii.; Lesson, *Nov. Tab. R. A.* 175.

*Moschus*, sp., *Erzleb. S. A.* 322, 1777; Zimm.; Desm. 1804.

*Musk*, sp., Penn.

*Moschiola*, Hodgson, *Calcutta J. N. H.* iv. 292.

*Tragul*, sp., Brisson, *R. A.* 95, 1756.

*Tragulus*, Sundevall, *Pecora*, 118, 119.

The *Pisora* inhabit the forests of India, near to, but without the various ranges of hills.—Hodgson.

The flesh is excellent; it lives in the dense woods of the Dukhun, not in the plains.—Sykes, *P. Z. S.* 1831.

### 1. MEMINNA INDICA. The MEMINNA or PISORA.

*Moschus Meminna*, *Erzl. Syst.* 322; Schreb. *Saugth.* 960. t. 243; Gatterer, *Brev. Zool.* i. 92; Tickell, *Calcutta Journ. N. H.* i. 1840, 420.

- Chevrotain**, &c., *Buffon*, *H. N.* xiii. 315.  
**Memina** ou Chevrotain de Ceylon, *Buffon*, *Supp.* iii. 102. 315. t. 15.  
**Meminna**, *Knöx*, *Ceylon*, 21; *Shaw*, *Zool.* ii. 256. t.  
**Indian Musk**, *Penn. Syn.* 59. t. 10. f. 2; *Quad.* i. 127. t. 127;  
*Knight*, *M. Anim. Nat.* f. 572, 574.  
**Pissay**, *Hamilton*, *Voy. E. Ind.* i. 261.  
**Mingee**, *Tickell*, *Calcutta Journ.* N. H. ii. 420.  
**Tragulus Memina**, *Sundevall*, *Pecora*, 63.  
**Meminna Indica**, *M. Malaccensis*, *Gray*, *Cat. Mamm. B. M.* 172;  
*List Osteol. B. M.* 63.  
**Tragulus mininoides** (or *Bijay*), *Hodgson*, *Journ. Asiat. Soc. Bengal*, x. 914.  
**Moschiola Minimoides**, *Hodgson*, *Calcutta Journ.* N. H. iv. 292.  
*Hab.* India; Madras; Ceylon.  
 Half-grown (not in good state). Madras. Presented by Walter Elliot, Esq.  
 Young. India.  
 Adult. India.  
 Young. India.  
**Meminna Malaccensis**.—*Gray*, *List Mamm. B. M.* 172.

#### OSTEOLOGY, t. 24. f. 3.

Skull of adult. India.

\*Skull and bones of body. India.

**ICON.** *Hardw. Icon. ined. B. M.* n. 10,975. t. 117 a, b, c.

### 3. HYEMOSCHUS.

Underlip and chin rather nakedish, with scattered hairs. The hinder edge of the metatarsus hairy, with a large callosity on the outer side near the heel. Two lateral toes elongate, with large tapering hoofs. The intermaxillary is very short, oblong, truncated behind, and placed on the front end of the truncated maxilla. The sides are spotted (like the *Meminna*).

These animals have much the habit of pigs. They take their food in the water; are called *Deer Pigs* by the French colonists in West Africa.

Dr. Hugh Falconer (*Proc. Zool. Soc.* 1843) gave some account of the osteology of the foot of this animal; and in his MSS. he informs me he has proposed to call the genus *Amphimoschus*. M. de Blainville has regarded it as the recent type of *Anoplotherium*. In the form of the feet it is very nearly allied to a fossil genus found in Auvergne, which M. A. Bravard has described under the name of *Cainotherium* (1835).

The metacarpus of *Moschus aquaticus* are distinct along their whole length; its fore-leg, from the carpus downwards, is un-

distinguishable from that of the *Pecary*; and its succentorial toes are as much developed as in the last-mentioned animal.

As *Dorcatherium* of Kaup breaks down the empirical distinction between the Ruminants and Pachyderms as regards the number of the teeth, so does the *Moschus aquaticus* as regards the structure of the feet.—*Falconer & Cautley, Proc. Geol. Soc.* 1843, 240.

*Hyemoschus*, Gray, *Proc. Zool. Soc.; Ann. & Mag. N. H.* xvi. 350; *List Osteol. B. M.* 63.

*Moschus* (aquaticus), *Falconer, Proc. Geol. Soc.* 1843, 240.

*Amphimoschus*, *Falconer, MSS.* 1843.

*Cainotherium*, sp., *Bravard*, 1835.

*Moschus*, sp., *Lesson, Nov. Tab. R. A.* 175, 1842.

Lesson refers *M. aquaticus* with doubt as a synonym of *Moschus Javanicus*.—*Nov. Tab. R. A.* 175.

#### 1. HYEMOSCHUS AQUATICUS. The BOOMORAH.

Brown. Two diverging streaks on the throat, chest, spots on back, a streak along each side, front edge of thighs, a spot over each hoof, and end of tail, white.

*Moschus aquaticus*, *Ogilby, P. Z. S.* 1840, 35; *Falconer, P. Geol. Soc.* 1843; *Wagner, Wiegmann Arch.* viii. 51.

*Hyemoschus aquaticus*, Gray, *Ann. & Mag. N. H.* xvi. 350; *List Osteol. B. M.* 63.

*Moschus Stanleyanus* (misprint for aquaticus), *Sundevall, Pecora*, 64.

Boomorah, *Negroes of Sierra Leone.*

Water Deer, *Colonists at Sierra Leone.*

Biche Cochon, *French Colonists in W. Africa.*

*Moschus Javanicus* var.?, *Lesson, Nov. Tab. R. A.* 175.

*Hab.* W. Africa. Bulham Creek, Sierra Leone; common. *Whitfield.*

Two adult. West Africa; Gambia. Presented by the Earl of Derby.

#### OSTEOLOGY, t. 25. f. 2.

\*Skull. The specimen described in the *Ann. & Mag. Nat. Hist.* xvi. p. 350, 1845. Sierra Leone. Presented by the Earl of Derby.

\*Skull and scapular. Sierra Leone. Presented by the Earl of Derby.

#### 4. TRAGULUS, Pallas.

Throat with a nakedish, concave, subglandular, callous disc between the rami of the lower jaw, from which a band extends

to the fore part of the chin. The hinder edge of the metatarsus nearly bald and slightly callous. Fur soft, adpressed. The intermaxilla elongate, subtriangular, extending up to the side of the nose.

*Tragulus, Pallas; Gray, Cat. Mamm. B. M. xxvii.*

*Moschus, sp., Desm. 1804; Gray, Proc. Zool. Soc. 1836, 65; Lesson, N. Tab. R. A. 175.*

*Tragulus, sp., Brisson, Reg. Anim. 95, 1756; Sundevall, Pecora, 118.*

*Tragulus § B, Sundevall, Pecora, 63.*

*Napu, Lesson, Nov. Tab. R. A. 175, 1842.*

*Tragus, sp., Klein.*

*ANAT. Rapp. Wieg. Arch. 1843, 43. t. 2 (three stomachs).*

# 1. TRAGULUS STANLEYANUS. The STANLEY MUSK.

Reddish fulvous. Hair black tipped, beneath white. Neck and chest shining fulvous. Crown darker. Tail moderate, pale beneath.

*Moschus Stanleyanus, Gray, Proc. Zool. Soc. 1836, 15 (not Sundevall).*

*Moschus ecaudatus, Temm. MSS. Mus. Leyden (1845); Sundevall, Pecora, 63.*

*Hab. Ceylon.*

Adult. Ceylon. Presented by the Earl of Derby.

*ANAT. t. 25. f. 3.*

\*Skull. Presented by the Earl of Derby.

# 2. TRAGULUS JAVANICUS. The NAPU.

Pale brown, black grised. Sides of head and rump shining fulvous. Neck and nape ashy. Throat with three white stripes. Belly white. Tail elongate.

*Tragulus Javanicus, Pallas, Spic. Zool. xiii. 18; Sundevall, Pecora, 121; Gray, Proc. Zool. Soc. 1836, 15. 65; Cat. Mamm. B. M. 173.*

*Moschus Javanicus, Gmelin, S. N. i. 174; Bennett, Zool. Gardens, 41; Raffles, Linn. Trans. xiii. 261; Donnd. Zool. Beytr. i. 583, 1792; Rapp. Wieg. Arch. 1843, 43. t. 2; Mus. Leyd. 1852.*

*Moschus Indicus, Gmelin, S. N. i. 172; Schreb. Saugth. 962. t. 245, not Brisson.*

*Moschus Napu, F. Cuv. Man. Lithog. t.; Fischer, Syn. Mam. 440.*

*Tragulus Napu, Sundevall, Pecora, 63.*

*Hab. Sumatra; Borneo; Java.*

Male. Java. Presented by the Hon. East India Company.

Sumatra. Presented by Lady Raffles.

This species, so well described by Pallas, is easily known by its larger size and the ashy grised neck. The Kanchil has a yellow neck with a black nuchal streak.

### 3. TRAGULUS PYGMEUS. The KANCHIL.

Fulvous varied with black. Sides of neck and body pale yellow, black tipped. Streak along nape blackish.

*Moschus pygmeus*, *Linn. Syst. Nat.* i. 92.

Kantil, *Lichtenberg in Voigt's Mag. Naturg.* iii. 2. 1.

*Moschus Kanchil*, *Raffles, Linn. Trans.* xiii. 262; *Fischer, Syn.*

*Mamm.* 441; *Waterhouse, Cat. Mus. Zool. Soc.* 31, 1838.

*Chevrotrain, Buffon, H. N.* xiii. 344. *Supp.* vi. 219. t. 30.

*Chevrotrain de Java ou Kanchil (M. Javanicus)*, *F. Cuvier, Mam.*

*Lithog.* t. 3. t. 9.

*Moschus Griffithsii*, *Fischer, Syn.*; *Griffith, A. K. t.*

*Javan Musk, Shaw, Zool.* ii. t. 173.

*Tragulus Kanchil, Gray, Proc. Zool. Soc.* 1836; *List Mamm. B. M.* 176.

*Tragulus affinis, Gray, List Mamm. B. M.* 176.

*Tragulus pygmeus, Sundevall, Pecora*, 62; *Gray, Knowsley Menag.* t.

*Hab.* Asiatic Islands; Java; Malacca; Penang; Borneo.

Java. Presented by General Hardwicke.

Female. Java. Presented by the East India Company.

Young.

Adult. India? Presented by Edward Burton, Esq.

Var. 1. Belly with a broad fulvous streak.

*Moschus intermedius*, "Gray, MSS."; *Waterhouse, Cat. Mus. Zool. Soc.* 38, 1838.

Var. 2. Under surface pale fulvous, with four white streaks.

*Chevrotrain, Buffon, H. N.* xii. 342. t. 42, 43.

*Moschus fulviventer, Gray, P. Z. Soc.* 1836, 65; *Waterhouse, Cat. Zool. Soc.* 38, 1838.

?? *Pelandoc, Raffles, Linn. Trans.* xiii. fide *Mus. Zool. Soc.*

?? *M. Pelandoc, H. Smith, Griffith A. K. v.* 769; *Lesson, Mamm.* i. 258.

Female; belly streak wider. Presented by General Hardwicke.

Young. Presented by General Hardwicke.

### OSTEOLOGY.

Three skulls. India.

Icon. *Hardw. Icon. ined. B. M.* n. 10,975. t. 118, 119, 120. n. 10,974. t. 85.



The synonyma of the species of *Tragulus* are exceedingly confused. From the very imperfect manner in which they are described and figured, it is impossible to identify with any of the foregoing species, or separate from them as distinct,

1. The Pelandoc figured in *Marsden's Sumatra*.
2. The Pigmy Musk of Sumatra, figured in Mr. Griffith's edition of *Cuvier's Animal Kingdom* (v. 62. t.), on which Fischer has established his *Moschus Griffithsii* (*Syn. Mam.* 414).

The *Moschus pygmaeus* is an Antelope; the hinder part of the tarsus being covered with hair; the false hoofs very small and rudimentary, and entirely hidden under the fur of the feet.

*Moschus Americanus* and *Moschus delicatulus*, or Leverian Musk of Shaw, are undoubtedly the fawn of Deer. It is curious that Dr. Shaw quotes as a synonym of the last-named species the figure of Seba, on which alone the *Moschus Americanus* is founded, while, at the same time, he enumerates *Moschus Americanus* as a distinct species.

#### Tribe 5. CAMELINA.

Cutting teeth eight above and below. Horns none. Hoofs small, compressed; false hoofs none.

Nose produced. Upper lip dependent, naked in front, and entirely covered with hair. Horns or crumen none. Ears oblong, moderate. Cutting-teeth eight in each jaw; canine teeth in each jaw. Neck long. Legs rather long; thigh free by the body (like those of men and apes). Toes two, elongate, callous beneath. Horns small, compressed, somewhat claw-like. False hoofs none.

*Camelus*, *Linn.*; *Cuv. T. E.* 1798.

(*Unguiculata bifida*) *Camelinum*, *Raii Syn.* 60, 1693.

*Camelina*, *Gray, Ann. Phil.* 1825; *Cat. Mamm. B. M.* xxvii.

*Tylopoda*, *Illiger, Prod.* 102, 1811; *Rüppell, Verz. Senck. Samml.* 184, 1845.

*Hydrophoræ*, *Gray, L. M. Rep.* xv. 307.

*Camelidæ*, *Gray, L. M. Rep.* xv. 307; *H. Smith, Griff. A. K.* v.; *Selys*, 1842; *Ogilby, P. Z. S.* 1836, 133.

*Inermia*, *Latr. Fam. Nat. R. A.* 62, 1825.

*Les Chameaux*, *F. Cuv.* 1829.

*Cameliers*, *Pomet, l. c.* 183.

*Camelinia*, part., *Rafin. Anal. Nat.* 55, 1815.

*Les Chameaux*, *F. Cuv. Dent. Mam.* 227. t. 93; *D. S. Nat.* lix. 512, 1829.

*Ruminantia c. acerati*, part., *Bronn, Index Palæont.* ii. 710.

*Cameli*, part., *Wagler, N. Syst. Amph.* 31, 1830.

*Cameloides*, Lesson, *N. Tab. R. A.* 167, 1842.

*Camelidæ* seu *Ecornis*, J. Brookes, *Mus. Cat.* 60, 1828.

They fold the feet under their body when they rest, with their chest on the earth, hence the knees and chest are generally callous.

#### SYNOPSIS OF GENERA.

1. CAMELUS. Back humped. Anterior grinders conical, far apart. Toes broad; soles nearly orbicular. Old World.
2. LLAMA. Back not humped. Grinders similar. Toes elongate; soles narrow. New World.

#### 1. CAMELUS.

Back with one or two humps. Grinders  $\frac{6-6}{6-6}$ ; anterior ones conical, far apart. Toes broad; sole nearly orbicular, only slightly separated in front. Tail short, tufted.

Living on leaves. Peculiar to the temperate and warmer parts of Asia and Africa, and naturalized in Southern Europe.

*Camelus*, sp., Linn.

*Camelus*, Cuvier; Illiger, *Prod.*; F. Cuv. *Dict. Sci. Nat.* lix. 512; Fischer, *Syn.* 434.

#### 1. CAMELUS ARABICUS. The SGHIMEL or DROMEDARY.

Back with a single hump.

*Camelus Dromedarius*, Linn. *Syst. Nat.* ed. 12. 90; Gmelin, *S. N.* i. 168; Forsk. *Faun. Orient.* 4; Erxl. *Syst.* 218; Zimm. *Geog. Gesch.* ii. 139; Schreb. *Saugth.* t. 303; Cuvier, *Menag. Mus.* t.; Reg. *Anim.* i. 250; F. Cuvier, *Dict. Sci. Nat.* viii. 94; Mam. *Lith.* t. 1, 2; Desm. *N. Dict. H. N.* vi. 42; *Mamm.* 424; Fischer, *Syn.* 435; Bronn, *Jam.* 488; Gray, *List Mamm. B. M.* 171; List *Osteol. B. M.* 62.

*Camelus* Luk, Eversmann, Bucharja.

*Camelus arabicus*, Desmoul. *Dict. Class. H. N.* iii. 452; Mem. Mus. x. 221; Sundevall, *Pecora*, 104.

*Camelus vulgaris*, Forsk. *Faun. Orient.* 4.

*Camelus monotophus*, Walther, Wetter. *Ann.* iv. 105.

*Camelus Dromas*, Gesner, *Quad.* 171. fig. 172; Alpin. *Ægypt.* i. 223. t. 12; Pallas.

*Camelus Arabiæ*, Plin. *H. Nat.* viii.

*Camelus Bactrianus*, Aldrov. *Bisulc.* 908. fig.

*Camelus minimus*, Klein, *Quad.* 42.

*Camelus vetus*, Frisch. *Naturg.* iv. 1.

*Camelus*, Jonst. *Quad.* 93. t. 42, 44.

*Dromedarius*, *Brisson*, *Reg. Anim.* 55.

*Chameau*, *Perr. Anim.* i. 69. t. 7; *Buffon*, *H. N.* xi. t. 9.

*Camel*, *Penn. Quad.* t.

*Arabian Camel*, *Penn. Syn.* 60; *Shaw*, *Zool.* ii. 166.

*Var.* 1. Stronger and slower.

*Camel* (Gimel or Jermal of the Arabs).

*Camelus* *Luk*, *Eversmann*.

*Var.* 2. Slighter and fleetier.

*Dromedary*, or *Hadgin* of the Arabs.

*Hab.* Desert of Arabia.

Young.

Adult, white. From the Berlin Museum.

**OSTEOLOGY.** *Grundler*, *Obs. Anat. Tubing.* 1817.

*Dromedaire*, *Daub. Buffon H. N.* xi. t. 21.

Skull. From Dr. Mantell's Collection.

Skeleton. N. Africa. From Mr. Fraser's Collection.

\*Skull.

Domesticated in Senegal, India. Varies in colour from brown to black and white.

## 2. CAMELUS BACTRIANUS. The MECHERI or CAMEL.

Back with two humps.

*Camelus Bactrianus*, *Linn. S. N.* ed. 12. i. 90; *Gmelin*, *S. N.* i.

169; *Forsk. Faun. Or.* 4; *Erxleb. Syst.* 221; *Zimmerm. Geogr.*

*Gesch.* 4. 140; *Schreb. Saugth.* t. 304; *Cuvier, Menag. Mus.* t.;

*Reg. Anim.* i. 250; *Fr. Cuvier, Dict. Sci. Nat.* viii. 93; *Desm.*

*N. Dict. H. N.* vi. 22. t. P. 12. f. 2; *Mamm.* 423; *Desmoul.*

*Dict. Class. H. N.* iii. 451; *Fischer, Syn.* 435; *Gray, List Mamm.*

*B. M.* 171; *List Osteol. B. M.* 61.

*Camelus Dithophus*, *Walther, Wetter. Ann.* iv. 163.

*Camelus Bactriae*, *Plin. H. N.* viii.

*Camelus Turcicus*, *Alpin. Aeg.* i. 223. t. 13.

*Camelus*, *Gesner, Quad.* 162. fig. 163; *Brisson, Reg. Anim.* 53.

*Dromedarii*, *Jonst. Quad.* t. 42, 44.

*Bactrian Camel*, *Penn. Syn.* 63; *Shaw, Zool.* ii. 239. t. 67.

*Chameau*, *Buffon, Hist. Nat.* xi. 211. 426. t. 22; *Sante, Mem.*

*Mus.* xvii. 320.

*Trampelthier*, *Knorr, Delic.* ii. t. K. 6.

*Hab.* Mongolian Deserts.

## OSTEOLOGY.

*Le Chameau*, *Daub. Buffon H. N.* xi. t. 24; *Kaup, Allg. Zool.* t.

Skeleton. Persia.

Domesticated in Eastern Europe, Persia, Tartary and India.

Varies from brown to white, and also greatly in size, strength and quickness, according to the breed and the climate.

## 2. LAMA.

Back even, not humped. Tail short, hairy. Toes slender; soles narrow, separate in front. Grinders  $\frac{5-5}{5-5}$ . South America.

*Lama*, Cuvier; *Desm. N. Dict. H. N.* xxiv. 31, 1804; *Fischer, Syn.* 436.

*Auchenia*, Illiger, *Prod.* 103, 1811 (not Marshall).

*Lacma*, Tiedemann, *Zool.* i. 421.

"*Llacma*, Cuvier," Illiger, *Prod.*

*Vicunia*, Rafinesque, *Anal. Nat.* 55, 1815.

*Dromedarius*, Wagler, *N. Syst. Amph.*

*Aucheria*, F. Cuvier, *Dict. Sci. Nat.* lix. 512 (misprint).

Les Lamas, F. Cuvier, *Dent. Mam.* 229.

*Elaphocamelus*, Mathiola, *Episc.* 381; *Marcgrave, Brasils*, 243.

*Cervocamelus*, *Jonst. Quad.*

Molini, and most systematic writers after him, have considered that there are five distinct kinds: viz.—1. *Vigoyne*, 2. *Guanaco*, 3. *Llama*, 4. *Alpaca*, 5. *Heuque*.

Desmarest (*N. D. H. N.* xxiv. 31, 1804) allows two. 1. *Lama* (*C. llama* and *huanacus*, Linn.). 2. *Vigogne* (*C. paco*, *C. Vicunia*, and *C. araucacus*, Linn.).

M. F. Cuvier allows of three kinds: he considers the *Vigoyne* as very doubtful, but the latter is often brought alive to this country.

Dr. Tschudi, in the *Fauna of Peru*, indicates four kinds: viz.—1. *A. huanaco*, 2. *A. Lama*, 3. *A. pacos*, and 4. *A. Vicunia*. He states that the *Lama* and *Alpaca* are only known in the domesticated state.

Dr. Sundevall (*Pecora*) considers there is only two species, the *A. Lama* and *A. Vicunna*, regarding the *Lama* and *Alpaca* as domestic varieties of the *Huanaco* (*A. Lama*).

Prof. F. L. Walther (*Neue Annal. Wetter. Gesellsch.* 1819, 105), on the other hand, proposes to divide the genus *Lama* into three sections. 1. *Lama*, with a callosity on the breast. 2. *Guanak*, with one on the (*Rucken*); and 3. *Araukan*, containing the *Vigogne* and *Pako*, without any callosities (*Höcker*)!

The period of gestation in the three kinds which have been bred at Knowsley, namely the *Llama*, *Alpaca*, and *Guanaco*, is eleven months; the *Llama* and *Alpaca* breed regularly; but by the *Guanaco* only a single fawn has been produced, to which one of the male *Llamas* is sire. None of them produce more than one at a birth.

In confinement, the *Vicuna* and the *Alpaca* often have the lower cutting-teeth elongated and projecting, giving the face a bulldog-like appearance. I have not observed this in the *Guanaco* or *Llama*.

The *Alpaca* may be a tame, heavy variety of the *Vicuna*, as it has the same short, hairy head; but the neck is thicker, and the whole animal heavier, and the hair of the head longer and more bushy, and it wants the pectoral fringe.

All the tribe have the disagreeable habit of spitting, when irritated, a quantity of half-digested cud; the *Llama* and *Alpaca* do this only when much annoyed; the *Guanaco*, on the contrary, upon the slightest occasion.

Unlike Sheep, these animals, in confinement at least, do not shed their coat.

Though the *Llama*, *Alpaca* and *Vicuna* are generally harmless and inoffensive, the males will very readily quarrel with each other.

Mr. Walton, a zealous advocate for the naturalization of the *Alpaca*, in his little book on the subject, published by Blackwood in 1844, apprehends better success will be the result when the *Alpacas* are turned on to waste and mountain lands than when they are kept on richer pasture and well cared for. But the fact that few, if any, specimens are now living in Great Britain beside those at Knowsley, does not favour this conclusion.

The *Llama*, the *Alpaca* and the *Vicugna*, are exclusively confined to the colder and more elevated regions of the Peruvian Andes; the *Guanaco* has a wider geographic range, extending to the plains of Patagonia, and even the southernmost extremity of the continent. The *Llama* inhabits the high valleys of the Peruvian-Bolivian Andes, its favourite region being the valley of the lake of Titicaca. It was the only beast of burthen possessed by the Aborigines; hence we find it wherever the Incas carried their conquests and civilization, from the equator to beyond the southern tropic. It is still extensively employed by the Indians as a beast of burthen, and its wool, though coarse, is used by the Aborigines. Like all domestic animals, it varies in colour; its flesh is nauseous, black, and ill-tasted.

The *Alpaca* or *Paco*, a gentle and handsome animal, although more closely allied to the *Llama* than any of its congeners, is a distinct species; it inhabits at still more elevated places than the *Llama*, its favourite haunts being on the streams descending from the snowy peaks; it is only found in a domestic state; it is reared for its wool, which is extremely fine, silky and long, and which now bears a high price, from its introduction into some of our finest woollen tissues. The *Vicugna* is only found in the wild state, in the plains on the Andes, as high as 1500 feet; its

wool is much prized for its fineness. The animal has a shrill whistle; it is easily domesticated. The *Guanaco*, by some naturalists considered erroneously as the parent stock of the *Llama* and *Alpaca*, is also only found in the wild state; it is seen as far north as lat. 12° S., is very abundant, and in large flocks on the Bolivian and Chilian Andes, and has been seen as far as the southern extremity of the continent. All these animals feed on a species of coarse, wiry grass called *ichu*.

In the Peru-Bolivian Andes the *Llama* and *Alpaca* are daily disappearing to make room for the more useful and profitable breed of the common European Sheep, while as a beast of burthen the *Ass* is everywhere taking its place.—*Pentland*, in *Mrs. Somerville's Physical Geography*, ii. 340, 342.

M. G. Geoffroy has announced, on the authority of Dr. Weddel, that a cross-breed between the *Alpaca* and *Vicuna* had been obtained, and that the mules of this cross-breed are capable of reproducing this newly-created species, the wool of which is represented as of a valuable quality; but Mr. Pentland has examined the case referred to and the evidence adduced, and does not consider it sufficient to establish the fact.

\* *Of a nearly uniform brown colour.* Wild.

# 1. LAMA VICUGNA. The VICUGNA.

Head short. Face covered with soft hair, like the neck, and of the same colour. Cheeks rather paler. Hair of temples not longer than that of the rest of the head. Eyelashes black. Ears hairy, brown, blackish washed. Neck and head without any long hairs. Sides of the body with longer, projecting, rather rigid brown hairs. Hind legs without any appearance of elongated warts. The hinder part of the belly and inside of the thighs less naked.

Skull (adult) 9 inches long; nose short; nasal bones short, broad; lacrymal opening none.

*Camelus Vicugna*, *Molini*, *Chili*, 277; *Gmelin*, *S. N.* i. 171; *Schreb. Saugh.* t. 307; *Lesson*, *Bull. Sci. Nat. Univer.* i. 252; *Zool. Journ.* i. 242.

*Lama Vicugna*, *Fischer*, *Syn.* 437; *Gray*, *Knowsley Menag.*

*Lacma Vicunna*, *Tiedem. Zool.* i. 421.

*Auchenia Vicunna*, *Desm. Mam.* 426.

*Lama Vicunna*, *Gray*, *List Osteol. B. M.* 62.

*Auchenia Vicugna*, *Desm.*

*Auchenia Vicunna*, *Sundevall*, *Pecora*, 107.

*Auchenia Vicunia*, *Tschudi in Wieg. Arch.* 1824, 245; *Fauna Peru*, t. 17.

*Vicunna*, *Laet. Nov. Orb.* 406; *Nieremb. H. N.* 184. f. 185; *Ulloa, Voy.* i. 506. 525. t. 24. f. 3; *Shaw, Zool.* ii. 243. t. 169.

*Vicogne*, *Buffon, H. N.* vi. 208. t. 34; *Sonnini, Nouv. Dict. H. N.* xiii. 254; *Cuvier, R. A.* i. 251; *F. Cuv. Dict. Sci. Nat.* xxv. 268; *Desmoul. Dict. Class. H. N.* iii. 456.

*Vicognes* or *Viconas*, *Frezier, Voy.* i. 266.

*Vicunias*, *Falkner, Patagonia*, 112.

*Hab.* Peruvian Alps.

Two, adult. Bolivia. From Mr. Bridges' Collection.

OSTEOLOGY, t. 24. f. 2. Skull.

Skull, male. Bolivia. From Mr. Bridges' Collection.

Skull, female. Bolivia. From Mr. Bridges' Collection.

Confined to the most elevated table-land and mountains of Bolivia and Northern Chili.

The *Vicuna* is purely a wild species; it has hitherto resisted all the efforts of the Aborigines, the most patient and docile of the human race, to render it prolific in its own climate and in domesticity.—*Pentland, l. c.* 341.

These animals jump and kick with their hind legs.

## 2. LAMA GUANACUS. The GUANACO.

Head elongate, tapering, slate-coloured, nakedish, covered with very short, uniform hair (which is often longer and rather tufted on the temple under and behind the eyes). Ears nakedish, blackish slate, white edged. Circumference of face from base of ears, and on the back of the temple, the lower jaw and chin, whitish. Eyelashes black. The neck and body covered with elongated, rather rigid hairs, projecting beyond the fur. The hinder part of the body in front of the thighs, the inner side of the fore-legs and thighs nearly naked. Chest only very slightly fringed. The hind legs with distinct, elongated warts.

Skull (adult)  $11\frac{1}{2}$  or 12 inches long; nose elongate; nasal bones elongate; lacrymal opening large.

*Camelus Guanaco*, *Trail, Wern. Trans.* iv. 492. t.

*Camelus Huanacus*, *Molini, Chili*, 231; *Gmelin, Syst. Nat.* i. 170; *Schreb. Saugh.* t. 305.

*Lama Peruana a*, *Fischer, Syn.* 436.

*Lama Pacos* (fera), *Gray, List Mamm. B. M.* 171.

*Lama huanacus*, *Gray, Knowsley Menag.*

*Auchenia Lama fera*, *Sundevall, Pecora*, 107.

*Auchenia glama* var., *Bennett, Gard. Zool. Soc.* 273. fig.

*Auchenia Lama*, *Brandt; Wagner.*

*Auchenia huanaco* *Tschudi, Fauna Peru.*

*Guanaco* seu *Huanacu*, *Laet. Nov. Orb.* 406, 1633; *Ovalle, Chili*, 44; *Ulloa, Voy.* i. 366. t. 24. f. 5; *Shaw, Zool.* ii. 246. t. 169, 170.

*Guianicoes, Hawkesw. Voy.*

*Guanaco, Byron, Voy. round the World; Darwin, Zool. Beagle, Mamm.* 26.

*Hab.* Peruvian Alps; the Pampas and mountains in Chili, Mendoza, and Straits of Maghellan.

*Adult.* Presented by Sir William Burnett and Capt. Fitzroy, R.N.

*Adult.* S. America. Presented by Charles Darwin, Esq.

*Half-grown.* S. America.

**OSTEOLOGY**, t. 24. f. 1.

*Skeleton.* Chili.

*Skull.* Chili. From Mr. Bridges' Collection.

*Two skulls.* Chili.

*Skull.* From the Zoological Society's Collection.

The *Guanaco* or *Wild Llama* is the characteristic quadruped of the plains of Patagonia; it is very common over the whole of the temperate part of the continent, as far south as the islands near Cape Horn. It generally lives in small herds, of from half a dozen to thirty in each; but on the bank of the St. Cruz we saw one herd which must have contained at least 500. They are generally wild and extremely wary. If, however, by chance the sportsman abruptly meet a single animal, or several together, they will generally stand motionless and intensely gaze at him, then perhaps move a few yards, turn round and look again. They are curious; for if a person lies on the ground and plays strange antics, such as throwing up his feet in the air, they will almost always approach by degrees to reconnoitre him: this artifice has the advantage of allowing several shots to be fired, which are all taken as part of the performance. On the mountains of Tierra de Fuego, I have more than once seen a *Guanaco* on being approached not only neigh and squeal, but prance and leap about in the most ridiculous manner, apparently in defiance as a challenge.

The Wild *Guanaco* are very easily domesticated, and I have seen some thus kept in Northern Patagonia near a house, though not under any restraint. They are in this state very bold, and readily attack a man by striking him from behind with both knees. It is asserted that the motive for these attacks is jealousy on account of the females.

The *Wild Guanacos*, however, have no idea of defence; even a single dog will secure one of these large animals till the huntsman can come up.



In many of their habits they are like sheep in a flock. Thus, when they see men approaching in several directions on horseback, they soon become bewildered and know not which way to run; this greatly facilitates the Indian method of hunting, for they are thus easily driven to a central point and encompassed.

The *Guanacos* readily take to the water; several times at Port Valdes they were seen swimming from island to island. Byron, in his *Voyage*, says he saw them drink salt water. Some of our officers likewise saw a herd apparently drinking the briny fluid from a salina near Cape Blanco. I imagine, in several parts of the country, if they do not drink salt water they drink none at all. In the middle of the day they frequently roll in the dust in saucer-shaped hollows. The males fought together. Herds sometimes appear to set out on exploring parties at Bahia Blanca, where within thirty miles of the coast these animals are extremely unfrequent. I one day saw the tracks of thirty or forty which had come in a direct line to a muddy salt-water creek; they then must have perceived that they were approaching the sea, for they had wheeled with the regularity of cavalry, and had returned back in as straight a line as they had advanced. The *Guanaco* has a singular habit, which to me is quite inexplicable, namely that on successive days they drop their dung on the same defined heap. I saw one of these heaps which was eight feet in diameter, and was composed of a large quantity. This habit, according to M. D'Orbigny, is common to all the species of the genus; it is very useful to the Peruvian Indians, who use the dung in fact, and are thus saved the trouble of collecting it.

The *Guanaco* appear to have favourite spots for lying down to die, on the banks of the St. Cruz, in certain circumscribed spaces, which are generally bushy and all near the river; the ground was actually white with bones; on one such spot I counted between ten and twenty heads. I particularly examined the bones; they did not appear, as some scattered ones which I had seen, gnawed or broken, as if dragged together by beasts of prey. The animal in most cases must have crawled, before dying, beneath and among the bushes. M. Bynoe informed me, that during a former voyage he observed the same circumstance on the banks of the Rio Gallegos. I do not at all understand the reason of this, but I may observe that the wounded *Guanacos* at the St. Cruz invariably walked towards the river.—*Darwin, Journ.* 168.

**\*\* Colour various, often variegated. Domestic.**

Almost every person who has lived where these animals abound consider there are two or more kinds found in the domesticated state, and they are all distinct from the two wild kinds already noticed. They will not allow that they are like the long-legged

Sheep of France and the short-legged Sheep of Lincolnshire, mere breeds of the same kind. Some authors, as Tschudi (*Fauna Peruana*), declare that they will not breed together, nor with the wild kinds, but Lord Derby has shown at Knowsley that this is not the fact.

I am led to believe that the *Lama* and *Alpaca* are only domestic races of the two preceding species, and that the *Alpaca* is probably a mule between them, for it has many characters common to the two wild kinds.

### 3. LAMA GLAMA. The LAMA or YAMMA.

Fur brown or variegated. Forehead and cheeks with short hair, like the rest of the head. Legs elongate, slender.

*Camelus Glama*, Linn. S. N. ed. 12. i. 91; *Gmelin, Syst. Nat.* i. 163; *Erzleb. Syst.* 224; *Schreb. Saugh. t.* 306; *Zimmerm. Geogr. Gesch.* ii. 140; *Cuvier, Menag. Mus. t.*; *Reg. Anim.* i. 251; *F. Cuvier, Dict. Sci. Nat.* xxv. 165; *Mam. Lith.* t.; *Sonnini, N. Dict. H. N.* xiii. 249. t. E. 25. f. 1.

*Camelus Peruvianus*, Brisson, *Reg. Anim.* 56.

*Camelus Llacma*, F. Cuvier, *Mam. Lithog.* t.

*Lacma Peruana*, Tiedem. *Zool.* i. 421.

*Auchenia Glama*, Desm. *Mam.* 425.

*Auchenia Lama*, Tschudi, *Fauna Peru, t.*; *Brandt, Bull. Acad. Sci. Petersb.* vi. 13.

*Auchenia Lama*  $\beta$ . *domestica*, Sundevall, *Pecora*, 107.

*Lama Peruana*  $\beta$ . *domestica*, Fischer, *Syn.* 436.

*Lama Pacos*  $\beta$ . *domestica*, Gray, *List Mamm. B. M.* 171.

*Lama Glama*, Gray, *Knowsley Menag.* t.

*Ovis Peruana*, *Hernand. Mexic.* 660. fig.; *Jonst. Hist. Nat.* t. 46. fig.

*Cervocamelus*, *Jonston, Quad.* t. 29; *Marcgrave, Brasil*, 243. fig.; *De Chile Regn.* 38. fig.

*Elephocamelus*, *Mathiola, Episc.* 1561, 381. fig., 1564, 630. fig.

*Llama*, *Ulloa, Voy.* i. 365. t. 24. f. 5; *Laet. Nov. Orb.* 1633, 405; *Penn. Syn.* 64; *Shaw, Zool.* ii. 241. t. 168.

*Lama*, *Buffon, H. Nat.* xiii. 16. *Suppl.* vi. 204. t. 27.

*Hab.* South America.

Adult, white.

OSTEOLOGY. *Brandt, Bull. Acad. Sci. Petersb.* vi. 13.

### 4. LAMA PACOS. The ALPACA.

Black, or black and white or brown varied. Forehead and cheeks with elongated hair. Body large. Sides with long pendulous hairs. Legs short. Belly and inside of the legs nakedish.

Skull (adult) 10 inches long; nose short; nasal bones very short, broad; lacrymal opening large.

*Camelus Pacos*, *Linn. Syst. Nat.* xii. 91; *Gmelin, S. N.* i. 171; *Erl. Syst.* 226; *Zimmerm. Geog. Gesch.* ii. 140; *F. Cuvier, Dict. Sci. Nat.* xxv. 166.

*Lama Pacos*, *Lesson, Mamm.* 352; *Fischer, Syn.* 437; *Gray, List Osteol. Brit. Mus.* 62; *Knowsley Menag.* t.

*Auchenia Lama*  $\gamma$ . domestica, *Sundevall, Pecora.*

*Auchenia Alpaca*, *Desm. Mamm.* 426.

*Auchenia Pacos*, *Tschudi, Fauna Peru*, t.

*Auchenia Glama* (var. *Llama*), *Bennett, Gard. Zool. Soc.* 283. fig.

*Pacos, Rati Syn.* 147; *Hern. Mex.* 663; *Penn. Syn.* 66; *Shaw, Zool.* ii. 245.

*Paco, Laet. Nov. Orb.* 405; *Buffon, H. N.* xiii. 16.

*Alpaque, Frezier, Voy.* i. 266.

*Hab.* South America.

Two, adult, black, male and female. Presented by the Earl of Derby.

Black, young, just born. Presented by the Earl of Derby.

Young, white and brown varied.

Adult, black. S. America. Presented by W. Danston, Esq.

*Var.?* Hybrid?

*Alpaca, F. Cuvier, Mam. Lithog.* t. (hybrid); *Gray, Knowsley Menag.* t.

*Var.?*

*Camelus Arucanus, Molini, Chili*, 279; *Gmelin, Syst. Nat.* i. 170.

*Lama Arucana, Fischer, Syn.* 438.

*Auchenia Arucana, H. Smith, Griff. A. K.*

*Aries Moromorus, Nieremb. Hist. Nat.* 182. fig.

*Sheep, Ovalle, Chili*, 44.

*Sheep of Peru, Cieza, Peru*, 232.

*Mouton, Feuill. Journ.* iii. 23.

*Mouton de Perou, Frezier, Voy.* i. 264. t. 22. f. a.

*Chilihueque, Shaw, Zool.* ii. 418; *Desmoul. Dict. Class. H. N.* iii. 455.

#### OSTEOLOGY.

\*Skull. S. America. Presented by W. Danston, Esq.

## Fam. 2. EQUIDÆ.

Two middle toes soldered into one ; covered with a single hoof ; lateral toes subequal. Cutting teeth 6-6. Canines  $\frac{1}{11}$ . Gullet and stomach simple. Using the hind feet in defence.

*Q. Solipeda seu Solidungula*, Ray, *Syn.* 62, 1693.

*Solidungula*, Illiger, *Prod.* 100, 1811 ; Bronn, *Index Pal.* ii. 707.

*M. Belluæ pars*, Linn. *S. N.* ed. 12. 27, 1766.

*M. Jumenta*, Storr. *Prod. Mam.* 1780.

*Les Solidipedes*, Cuv. *Tab. Elem.* 1798 ; Desm. *N. D. H. N.* xxiv.

55, 1804 ; Dum. *Z. A.* 1806 ; Latr. *Fam. N.* 62, 1825 ; F. Cuv.

*Dict. Sci. Nat.* lix. 516 ; Geoff. *Mem. Mus. H. N.* x. 165.

*Les Pachydermes Solipedes*, Cuvier, *R. A.* i. 243, 1817, ed. 2. i. 251.

*Stereoplia*, *Stereopodia*, *Solipedia*, Rafinesque, *Anal. Nat.* 55, 1815.

*Pachyderma Solipedia*, Owen, *Brit. Foss. Mam.* 383, 1846.

*Pachyderma Solidipedes*, Eichw. *Zool. Spec.* iii. 351, 1831.

*Q. Monochænæ*, Gray, *L. Med. Repos.* xv. (1821) 306.

*Equidæ*, Gray, *L. M. Repos.* xv. 307, 1821 ; *Ann. Phil.* 1825 ;

*List Man. B. M.* 182 ; *List Osteol. Spec. B. M.* 70 ; Ham.

Smith, *Jardine's Nat. Library*, xii.

*Equi*, Wagler, *N. Syst. Amph.* 4, 1830.

*Solipedia*, *Equidæ*, Selys Longchamps, 1842.

*Solipedia*, J. Brookes, *Mus. Cat.* 17, 1828.

*M. Perissodactyles Palæotheriens*, Pomel, *Rev. Zool.* 1848, 182.

*Solidungula*, Fam. *Equidæ*, Lesson, *N. T. Reg. Anim.* 165, 1842.

*Anomalipoda*, part., Pallas, *Zool. Ross. Asiat.* i. 254, 1831.

*Equus*, Linn. ; F. Cuvier, *Dict. Sci. Nat.* lix. 54, 1829.

The *Equidæ* form two genera, but the species of them, viz. the Horse and the various species of the second group, breed together freely in confinement, but the produce is almost always (if not always) barren.

## SYNOPSIS OF THE GENERA.

1. *EQUUS*. Tail covered with long hair to the base ; the fore and hind legs with a wart (sallenders) on the inner side.
2. *ASINUS*. Tail with short hair at the base and long at the end ; the hind leg without any wart on the inner side.

1. *EQUUS*.

Tail covered with long hair to the base. Fur dappled, that is. marked with round pale spots having a dark net-like ground.

Fore and hind legs with hard horny bodies called warts, chestnuts, or sallenders, placed above the knee (wrist) on the fore-legs and below the hock (heel) in the hind ones.

*Equus*, Gray, *Zool. Journ.* i. 261, 1825; *List Mam. B. M.* 182; *List Osteol. B. M.* 70; *List Hodgson Collection*, 35.

*Equus*, sp. Linn.; Lesson, *N. Tab. R. Anim.* 165, 1842.

*Caballus*, Rafinesque, *Anal. Nat.* 55, 1815.

The warts are rarely absent on the hind legs, for it is stated that "the bay mare *Eaglet* was without sallenders on the hock joint."—*Jamaica Times*, 1845, Aug. 26.

#### 1. *EQUUS CABALLUS*. The HORSE.

Brown, grey, or black, with roundish pale spots.

Var. *Equiferus*, Pallas, *Zool. Ross. Asiat.* i. 260; *Eichw. Faun. Casp. Caur.* 29.

Wild Pferde, S. G. Gmelin, *Reise Rusland*, i. 44. t. 9 (cop. Shaw *Zool.* t. 414; Schreb. t. 109); Pallas, *Reis.* i. 211.

Takija or Wild Horses, Hanway, *Hist. Caspian Sea*, i. 349; Bell, *Travels*, i. 212; Smith, *Equidæ*, 146.

The figure of the *Wild Horse* as given by Gmelin very much resembles the ponies left at liberty on the commons of Cornwall and mountains of Scotland, and it appears very doubtful if they are not rather to be considered as domestic horses which have escaped and deteriorated. Pallas observes that the very young are easily tamed, but the adult never. (*Z. R. A.* 260.) It is to be observed that this is not the case with the horses which have become semi-wild in the rich prairies of America, where they have retained the size and form of the well-bred horse.

#### *Domestic Varieties.*

*Equus antiquorum*, Gesner, *Quad.* 132.

*Equus Caballus*, Linn. *Syst. Nat.* i. 100; Gmel. *S. N.* i. 209; Desm. *Mamm.* 416; F. Cuvier, *Dict. Sci. Nat.* viii. 455; Fischer, *Syn. Mam.* 429; Gray, *Zool. Journ.* i. 260; *List Mam. B. M.* 182; *List Osteol. B. M.* 70; *List Hodgson Coll.* 35; Renger, *l. c.* 331.

*Equus Equus*, Pliny, *H. N.*; Gesner; Pallas, *Z. R. A.* i. 255. Horse, Penn. B. Z. i.

Generous Horse, Penn. *Quad.*

Cheval, Buff. *H. N.* iv. 174; Cuvier, *R. A.* i. 243.

Pferd, Redinger.

Ross, Schrank.

The Horse, Youatt, *The Horse, its History, Breeds, &c.*, Ham. Smith, *Equidæ*, Jardine's *Naturalist's Library*.

- The Tarpan Wild Horse, primæval bay stock, *H. Smith, Equidæ*, 160. t. 3.
- The Andalusian Horse, *H. Smith, Equidæ*, 247.
- South American Horse, *H. Smith, Equidæ*, 247.
- The Parameros of Peru, *H. Smith, Equidæ*, 248. t. 12.
- Mexican Horse and Seminole Horse, *H. Smith, Equidæ*, 249.
- Feral Horses of America, *H. Smith, Equidæ*, 173.
- The Arabian Horse, *Bewick, Hist. Quad.* 4. fig.; *Low, Dom. Anim. Brit. Isl.* t. 1; *Smith, Equidæ*, 210. t. 8.
- The Race Horse, *Bewick, Quad.* 6. fig.; *Low, Dom. Anim. B. I.* t. 2.
- English Race Horse, *Smith, Equidæ*, 251. t. 9.
- Hunter, *Bewick, Quad.* 8. fig.
- The Old Irish Hunter, *Low, Dom. Anim. B. I.* t. 3.
- The Connamara Horse, *Low, Dom. Anim. B. I.* t. 4.
- Black Horse, *Bewick, Quad.* 10. fig.
- The Old English Black Horse, *Low, Dom. Anim. B. I.* t. 5.
- The Cleveland Bay Horse, *Low, Dom. Anim. B. I.* t. 6.
- The Suffolk Punch, *Low, Dom. Anim. B. I.* t. 7.
- The Clydesdale Breed, *Low, Dom. Anim. B. I.* t. 8.
- Old English Road Horse, *Bewick, Quad.* 9. fig.
- Common Cart Horse, *Bewick, Quad.* 13. fig.
- Improved Cart Horse, *Bewick, Quad.* 14. fig.
- The Barb of Morocco, *H. Smith, Equidæ*, 224. a. The Shrubat Ur reech, t. 11.
- The Bornou (white) Race of Africa, *H. Smith, Equidæ*, 228. t. 10.
- The Dongolo (black) Race, *H. Smith, Equidæ*, 229. t. 10\*.
- The Turkish Race, *H. Smith, Equidæ*, 231.
- The Persian Race, *H. Smith, Equidæ*, 233.
- The Toorkee Races, *H. Smith, Equidæ*, 238.
- The East Indian Races, *H. Smith, Equidæ*, 241.
- The New Holland Horse, *H. Smith, Equidæ*, 245.
- The Transylvania Horse, *H. Smith, Equidæ*, 245.
- The Moldavian Horse, *H. Smith, Equidæ*, 245.
- The Greek Horse, *H. Smith, Equidæ*, 245.
- The Spanish Horse, *H. Smith, Equidæ*, 246.
- Cheval d'Islande (var. Islandicus), *Quoy & Gaim. Voy. Island. Mam.* t. 11; *Lesson, N. Tab. R. A.* 166.
- Equus Mongolicus, *Lesson, N. Tab. R. A.* 166.
- Thibet Horse, *Hodgson, Journ. Asiat. Soc. Bengal*, i. 348, 349.
- Cheval à port frisses, *E. frisius*, *F. Cuvier, Mam. Lithog.* t.
- Equus Caballus frisius, *Lesson, N. Tab. R. A.* 166.
- Villous Horse (primæval of the white stock), *H. Smith, Equidæ*, 262. t. 4.
- The White or Grey Horse, *H. Smith, Equidæ*, 262. (Marengo, *Bonaparte's Arab.*) t. 8.

The Crisp-haired Horse (primæval of the black stock), *H. Smith, Equidæ*, 266. t. 5.

The Black Horse, *H. Smith, Equidæ*, 266. t. 14. (the English Draught Horse) 269.

The Dun or Tan Horse, *H. Smith, Equidæ*, 274.

The Decussated Horse, or the Eelback Dun Horse of Ukraine, *H. Smith, Equidæ*, 274. t. 6.

The Myautzee, or the Pied Horse of China, *H. Smith, Equidæ*, 277.

The Bhooteahs Ponies, *H. Smith, Equidæ*, 278.

The Pickarrow Ponies, *H. Smith, Equidæ*, 278.

The Yaboos of Affghanistan Ponies, *H. Smith, Equidæ*, 278.

The Hungarian Horse (with slit nostrils), *H. Smith, Equidæ*, 278. t. 11.

The Common Bashkir Horse, *H. Smith, Equidæ*, 278.

The Morea Ponies, *H. Smith, Equidæ*, 282.

The Swedish and Norwegian Ponies, *H. Smith, Equidæ*, 282.

The Shetland Ponies, *H. Smith, Equidæ*, 283. t. 15.

The Galloway, *H. Smith, Equidæ*, 283.

The Dartmoor and Exmoor Pony, *H. Smith, Equidæ*, 284.

Sardinian Wild Horse, *H. Smith, Equidæ*, 285.

The Tatoo or the East Indian Pony, *H. Smith, Equidæ*, 285.

Tuttoo or Mahratta Pony, *Sykes, P. Z. S.* 1831.

Sedulously propagated in the Dukhun: much used to transport luggage, and very vicious.—*Sykes*.

Tattoo or Hack Pony of Calcutta, *Hardw. Icon. fined.* no. 10,975. t. 116, no. 10,974. t. 81.

The Tangum Piebald or Skewbald Horse, *Equus varius, H. Smith, Equidæ*, 288. t. 7.

The Tangum (or Tanghans), Primæval Piebald stock of Thibet, *H. Smith, Equidæ*, t. 7.

Skewbald of Achin in Sumatra, *H. Smith, Equidæ*, 293.

Tangham of China, *Hodgson, Icon. ined. B. M.* t. 212. f. 1.

Tangham of Lhassa, *Hodgson, Icon. ined. B. M.* t. 212. f. 3, t. 213.

Tangham of Gyanche, *Hodgson, Icon. ined. B. M.* t. 212. f. 3.

Hubstee of Deo Dharma, *Hodgson, Icon. ined. B. M.* t. 214.

The Koomrah, or *Equus hippargus, H. Smith, Equidæ*, 294.

The Koomrah, *Equus Lalisi, H. Smith, Equidæ*, t. 16.

*Hippargus, Oppian.*

*Boryes, Herodotus.*

Bourra of Koldagi, *Rüppell*. Northern Africa. Not gregarious.

The specimen in the British Museum, which Col. H. Smith mentions as being like the *Koomrah* (*Equidæ*, 296), was a Dartmoor pony which Dr. Leach had stuffed to place in the collection of British animals.

The Kuda or Saran Horse, *H. Smith, Equide*, 287.

The Javan Horse, *H. Smith, Equide*, 287.

The Tamboro or Birma Horse, *H. Smith, Equide*, 287.

Horse with a curled moustache on the upper lip, of Asiatic Russia, *Pallas, Spic. Zool.* xi. 5. t. 5. f. 6; *Zool. Ross. Asiat.* i. 250.

Horse covered with curled woolly hair, of Asiatic Russia, *Falk. Itiner.* iii. 529; *Pallas, Zool. Ross. Asiat.* i. 250.

Naked Horse of a beautiful form, of Asiatic Russia, *Pallas, Zool. Ross. Asiat.* i. 250.

The Argamaki of Bocharis, a White Horse with very close, minute, orbicular, brown spots, of Asiatic Russia, *Pallas, Zool. Ross. Asiat.* i. 250.

#### OSTEOLOGY, t. 37. f. 1.

Cheval, *Daubenton, Buffon, H. N.* iv. t. 10; *Cuvier, Oss. Foss.* ii. t. 1, 2, 3; *Volkman, Anat. Anim.* i. t. 11. f. 8; *Stevens, Book of the Farm*, 1284. f. 577.

Skull of young with milk teeth.

Skeleton mounted

Skeleton mounted: pony.

Skull.

Skull, larger.

Skull of an English horse. Presented by B. H. Hodgson, Esq. Pelvis. From Dr. Mantell's Collection.

#### ICON.

Drawing of Chinese Tangham, *Hodgson, Icon. ined. B. M.* t. 212. f. 1.

Drawing of Lhassa Tangham, *Hodgson, Icon. ined. B. M.* t. 212. f. 2, and t. 213.

Drawing of Gyánchez Tangham, *Hodgson, Icon. ined. B. M.* t. 212. f. 3.

Drawing of Hubstee of Deo Dharma, *Hodgson, Icon. ined. B. M.* t. 214.

Tattoo or Hack Pony of Calcutta, *Hardw. Icon. ined. B. M.* n. 10,975. t. 116, n. 10,974. t. 81.

Horses were introduced by the French in the Falkland Islands in 1764, since which time they have greatly increased. They have never left the eastern end of the island, although there is no natural boundary to prevent them from roaming, and that part of the island is not more tempting than the rest. The



stallions are said to be constantly roaming from place to place, and compelling the mares to accompany them, whether or not the young foals are able to follow, and they are left to die. The predominant colours are roan and iron-grey.

All the horses bred here, both tame and wild, are rather small-sized, though generally in good condition, and they are not so strong as the horses from the Plata.—*Darwin, Journal*, 192.

The Horse was first landed at Buenos Ayres in 1537, and the colony being then for a time deserted, it ran wild: in 1580, only forty-three years afterwards, one hears of them at the Strait of Magellan. The natives of Terra del Fuego are well-stocked with horses, each man having six or seven, and all the women and even children their own horse.—*Darwin, Journal*, 233; *Renger, Natur. Saugth. Paragua*, 334.

The soldiers in Bahia Blanca eat mare's flesh for food.—*Darwin, Journal*, 101.

In Banda Oriental they think it ridiculous to break in or ride a mare; they are of no value except for breeding, and, rarely, to tread out the wheat from the ear, for which purpose they are driven round a circular enclosure where the wheat sheaves are strewn. Numbers are slaughtered for the sake of their hides, although only worth about half-a-crown a-piece.—*Darwin, Journ.* 134.

Darwin gives an interesting description of the breaking in of the wild young horses of Banda Oriental.—*Journal*, 151.

Horses do not breed on the southern face of the Himalayas, but are imported from Thibet.—*Munday, Journ.* ii. 75; *Ogilby in Royle Himal.* i. lxxi.

Skins of horses are used for cloth, to make churns, &c.—*Simpson, Overland Journey*, ii. 307.

The roundish marks are called *copper-marked* in brown, *dappled* in grey horses. These marks become more visible in the brown horses when they are in high condition.

Horses are technically called according to their colours. *Bay*,—Brown, with black mane and tail; some have black legs, they are then called bay with black points. *Chestnut*,—Red brown, either dark or light. *Brown*,—Nearly black: if they have a tan mouth they are called *brown muzzles*. *Black*. *Dun colour*. *Roan*, *Strawberry*,—very red grey. *Piebald*,—With three colours. *Skeubald*,—Two colours. *Cream colour*.—The white mark on the forehead is a *star*; if down the face, a *blaze*.

## 2. ASINUS. The ZEBRAS.

Have the upper part of the tail covered with short hair, and the lower part covered with longer hair forming a tuft; the fur marked with darker stripes; the fore-legs only furnished with hard horny warts in a similar situation to those in the front legs of the *Horse*, but there are none in the lower part of the hinder legs.

*Asinus*, Gray, *Zool. Journ.* i. 261; Lesson, *N. Tab. R. A.* 166, 1842.

*Chevaux (Asinus)*, F. Cuvier, *Dent. Mam.* 224. t. 92.

*Equus*, sp., Linn.

*Asinine Group*, H. Smith, *Equidæ*, 298.

\* Colour nearly uniform with a dark longitudinal dorsal stripe; some have a black stripe across the shoulders. The Asses of Asia.

Asses of Asia, Gray, *Knowsley Menag.* 74.

† Ears elongated, acute. The Tame or Domestic Asses.

These animals vary greatly in size and appearance according to the climate. They are large and smooth-haired in the warmer climates; small and shaggy in the colder countries.

It is very doubtful if the Domestic Ass is found in a truly wild state; the asses which have been described as wild, appear rather to be domestic animals which have escaped, or mules between the Domestic Ass and the allied wild species; for when caught they, after a short time, submit themselves to man, which is not the case with what I have here considered as the wild kinds.

Pallas justly observes, "In extensis Asiæ desertis primam patriam esse quærendam *Equi feri et Onagri* a Nomadibus in domesticos usus domatorum, æque ac *Hemioni* hactenus indomiti."—*Zool. Ross. A.* i. 255. This is equally applicable to the African species.

## 1. ASINUS VULGARIS. The DOMESTIC ASS.

Grey, with a longitudinal dorsal streak and a dark streak across the shoulders; ears elongate; facial line arched. Skull with suborbital foramen as in *E. Hemionus*.

*Equus asinus*, Linn.; Renger, *Nat. Parag.* 341; Pallas, *Zool. R. A.* i. 263.

*Asinus vulgaris*, Gray, *Zool. Journ.* i. 244; J. Brookes, *Mus. Cat.* 19; Gray, *Knowsley Menag.* 71.

*Equus asina*, *Fleming, Phil. Zool.* ii.

*Asinus*, *Plin. Hist. Nat.* viii. 44.

*Ass, Penn.*; *Bewick.*

*Asne, Buffon.*

*Ane, Cuvier.*

*Asinus onager*, "*Gray*," *Bonap. Index Mam. Eur.* 34, 1845.

*Asinus domesticus*, *Domestic Ass, H. Smith, Equidæ*, 314.

*Var.* Without any cross.

*Var.* Legs and body more or less banded.

*Domestic varieties.*

Gudha of the Mahrattas, very little larger than a good mastiff or Newfoundland dog, *Sykes, P. Z. S.* 1831.

*Domestic Ass of Ispahan, H. Smith, Equidæ*, 314.

*Domestic Ass of Beloochistan, H. Smith, Equidæ*, 314.

*Domestic Ass of Thibet, with a cross band, Stachey.*

The Pico of ancient Egypt, *H. Smith, Equidæ*, 314.

Tasandunt of the Shelluhs, *H. Smith, Equidæ*, 314.

The Djaar of Arabia, *H. Smith, Equidæ*, 311.

The Lalisiones or Wild Ass Colts, *H. Smith, Equidæ*, 311.

*Lalisio, Martial*, xiii. 97.

*Wild Ass, Lenant, Voy. on the Bahar el Ahad; Hoskins, Travels in Ethiopia.*

*Egyptian Ass, H. Smith, Equidæ*, 312.

OSTEOLOGY.

*Asne, Daubenton, Buffon H. N.* iv. t. 12, 13.

Skeleton, mounted.

The common Domestic Ass is sometimes of the usual grey colour, without any appearance of the cross. They are sometimes black, and at others white, rarely skewbald; but this is the common albinism and melanism of domestic animals, and when of these colours the cross is not apparent, or at least sometimes only to be seen when the animal is observed obliquely.

†† *Ears moderately short, rounded.* The Wild Asses.

2. *ASINUS ONAGER.* The KOULAN or WILD ASS.

Pale reddish (in winter greyish); dorsal streak black, rather wider over the small of the back; skull with the infraorbital foramen high up, about one-third the space between the face-line and the back edge of the teeth; far back being directly over the front end of the cheek ridge and the back edge of the third grinder.

*Asinus sylvestris, Plin. Hist. Nat.* viii. 44.

*Onager*, *Plin. Hist. Nat.* viii. 44; *Raii Quad.* 6; *Act. Acad. Soc. Imp. Petrop.* 1777, 258. t. 11; *Neue Nord Beytr.* ii. 22. t. 2, iv. 80.

*E. Asinus onager*, *Schreb. Saugh.* t. 312.

*Equus onager*, *Brisson, Règ. Anim.*; *Pallas.*

Wild Ass, *Bell, Travels*, i. 212; *Heber's Travels.*

Koulán or Wild Ass, *Penn. Quad.*

*Equus Hemionus* (Wild Ass of Kutch and the Indus), *Sykes, Proc. Zool. Soc.* 1837, 91, not *Pallas*; *I. Geoff. Nouv. Ann. Mus. N. H.* iv. 97. t. ♀, 3 years old.

*Asinus Hemionus*, *Gray, Osteol. Spec. B. M.*; *H. Smith, Equide*, 316. t. 20; *Gray, Proc. Zool. Soc.* 1849, 29; *Knowsley Menag.* 71.

*Equus Khur* (Ane Khur), *Lesson, Manual Mamm.* 347, 1827.

Wild Ass or Gour, *Ker Porter, Travels Georgia, Persia*, i. 460.

Wild Ass or Khur of the Persians, *Isis*, 1823, 764.

*Onager*, *Xenophon*; *Barboza, Collect. Ramusio*. i. 300, b. (*Malabar and Golconda*).

*Hemione* or *Dziggtai*, *Lesson, Comp. Buffon*, x. 379, from *Geoffroy*; *F. Cuvier, Mamm.* 1823; not *Pallas*.

The Hymar or Hamar of Mesopotamia, *H. Smith, Equide*, 313.

*Asinus Hamar* (the Hamar), *H. Smith, Equide*, t. 19.

Chamor of the Hebrews.

*Hab.* The Plains of Mesopotamia, Persia, Kutch; shores of the Indus, Punjab.

a. Young (eight months old, died in September). Mesopotamia. Presented by J. H. Layard, Esq., M.P.

b. Adult. India, Kutch. Presented by the Earl of Derby.

#### OSTEOLOGY.

Skull and bones of body. India, Kutch. Presented by the Earl of Derby.

They are abundant in Mesopotamia, and are evidently the Wild Ass of Xenophon. The adults are very difficult to approach within rifle range. The young are sometimes caught alive.—*Layard.*

The *Khur* inhabits the deserts of Persia in troops, frequenting the hills in summer and the plains in winter.

*Pallas*, in a paper entitled "Observations sur l'Asne dans son état sauvage, ou sur le véritable Onagre des anciens" (*Act. Acad. Sci. Imp. Petrop.* 1777, 258. t. 11), figured a Wild Ass which was sent by sea from Derbent to Astracan. The figure greatly resembles the mule between the *Hemione* and the *Ass* now in the Zoological Gardens, but the ears appear a trifle longer. It is coloured in the same manner as the *Hemione*, that is to say, the more prominent parts of the body are dark, and the middle

of the back, the front of the haunches and thigh and the under part of the body are paler. The figure represents but a very indistinct cross band on the shoulder.

On this Pallas observes, "L'étalon différait encore de la femelle en ce qu'il avait tout le corps plus robuste, l'encolure plus grosse, la poitrine et la croupe plus large, et surtout par un barre ou raye transversale (tab. xi.), qui croisait sur les épaules avec celle qui s'étend de long de l'épine dans l'un et l'autre sexe. C'est cette croix que la plupart des ânes domestiques mâles ont conservés, et qui embellit surtout ceux qui ont la couleur du poil claire. Cette barre transversale bien plus étroite que l'autre manque entièrement aux Onagres femelles : quelques Tartares m'ont au contraire assurés qu'elle se voyait assez souvent double dans les mâles." (l. c. 269.)

This paper is translated into German, and a copy of the plates with a second figure of the back of the animal is given in Pallas, *N. Nord. Beytr.* ii. 22, t. 2; but in this figure the cross band on the shoulders is not marked. From this description it would appear that the animal which is called the *Wild Ass* is not always marked with the cross band on the shoulder which is so permanent in the domestic kind, and has hitherto been considered as its specific character.

The chief difference between Pallas's figure of the *Wild Ass* and the *Hemione* is the greater length and more acute form of the ears; of the latter the mule varies in this character.

"No attempt has been made to break the *Wild Ass* (of Rajpootana) in for riding, nor did it appear that the natives ever thought of such."—*Bishop Heber*.—*H. Smith, Equidæ*, 311.

"The *Wild Ass* of Cutch has the cross stripe on the shoulder, and differs in colours and heavier proportion from the *Wild Ass* of Kerr Porter."—*Bishop Heber*.—*H. Smith, Equidæ*, 311.

Col. Ham. Smith confounds the domesticated *Gudha* with the *Wild Ass* of the Deccan described by Colonel Sykes, and states on the Colonel's authority that "it is not larger than a mastiff."—*Equidæ*, 307.

Eversmann states that many specimens of the *Kulan* or *Equus Onager*, Pallas, have been brought to Orenburg from the high steppes between the Caspian and the Aral seas. A good specimen and a skull are in the Museum of the University of Kassar.

All these specimens are without the cross band, and have only the longitudinal dorsal streak. Eversmann considers that the cross band is either not the character of the species, or perhaps a sexual mark, as he observes that he is not able to discover the specific character which separates the *E. Hemionus* from the *E. Onager*. He further observes that the Mongolians have no particular name for the *E. Onager* of Pallas; the Tartars no name

for *E. Hemionus*: the Mongolians called the *E. Hemionus Dshiggetei*, or more properly *Tschikitei*, meaning *long ears*, and the Tartars call the *E. Onager*, *Kulan*.

Eversmann remarks that Pallas (*N. Nord. Beytr.* ii. 34) states that the male *M. Hablizl* brought from Persia had no cross, but that the female which was shot on the Murecy had one. He proceeds to calculate the length of the ears of these animals, compared with the other measurements of them, and he finds that the ears of the male appear to be considerably (near 2 inches) shorter in proportion than the ears of the female.—*Bull. Soc. Imp. Nat. Mosc.* 1840, 57.

The Mule with *Asinus domesticus* has the short smooth fur exactly like the sire, but with a short narrow cross band on the shoulder; the ears rather longer and black tipped.

### 3. ASINUS HEMIONUS. The KIANG.

Fur short, smooth, bright red bay; legs straw colour (in winter long, rather woolly, greyish, legs whitish), with a broad longitudinal dorsal streak, broadest over the small of the back, without any cross band on shoulders. Skull: the infraorbital foramen low down, in the centre of the space between the face-line and the base of the teeth, and placed in a line over the back edge of the second grinder, some distance in front of the end of the cheek-ridge.

*Mulus dauricus* fœcundus, *Messerschm. MSS.*

*Equus Hemionus*, Pallas, *Nov. Comm. Petrop.* xix. 394. t. 7, cop. *Neue Nord. Beytr.* ii. 31. t. 1; *Reise*, iii. 217, cop. *Schreiber, Saugh.* t. 311; *Eichw. Faun. Casp. Caur.*

*Equus Hemionus* (Kiang), *Ogilby, in Royle Himal.* i. lxxi.; *Walker, Journ. Asiat. Soc.* 1848, t. 1.

*Equus Hemionus*, Bodd.

*Asinus Hemionus*, Gray, *Zool. Journ.* i. 244; not *Knowsley Menag.*

*Equus onager*, Eversmann, *Bull. Soc. Imp. Nat. Mosc.* 1840, 56.  
? *Asinus onager* (Onager Koulan or Wild Ass of Tartary), H. Smith, *Equidæ*, 307. t. 18?

*Asinus Equioides*, Hodgson, *Journ. Asiat. Soc. Beng.* xi. 287; *Blyth, Journ. Asiat. Soc. Beng.* xi. 287.

Wild Ass, Moorcroft, *Travels.*

*Equus Kiang*, Moorcroft, *Residence at Ladack*, i. 311. 443; *Lesson, Manuel*; Gray, *Proc. Zool. Soc.* 1849, 29; *Knowsley Menag.* 72; Hodgson, *Journ. Asiat. Soc. Calc.* 1842, 286.

*Equus varius*, part., *Ham. Smith, Equidæ*, 289.

*Asinus polyodon*, Hodgson, *Calcutta Journ. N. H.* 1847, 469. t. 6, animal and skull.

- Jikta, *Shaw, Zool.* ii. 427.  
 Dshikketee, *Penn.*  
 Dgiggetai, *Cuvier, R. A.* i. 244.  
 Dziggethai, *Buffon, Supp.* vi. 37.  
 Wild Mule, Half Ass, or Fecund Mule, *Penn. Quad.* i.  
 Wild Ass, *English in Thibet.*  
 Hemionos, *Plin. Hist. Nat.* viii. c. 44.  
 L'Hemione, *Bncy. Méthod.* t. 42. f. 4.  
 The Ghoor or Khur, "*Moorcroft,*" *H. Smith, Equidæ*, 310.  
 Wild Esel, *Eversmann, Bull. Mosc.* 1840; *Wagner, Wiegmann Arch.* viii. 1842, 49.  
 The Kiang, *H. Smith, Equidæ*, 289.  
 Wild Horse, *Gerrard, Asiat. Research.* xvii. 247.  
*Hab.* Thibet.

Male between winter and summer fur. Thibet. Presented by Lord Gifford.

Male. Thibet. Presented by the Hon. East India Company.

*Var.* 1. with a distinct cross band on the shoulder like the Domestic Ass. Thibet. *Capt. Strachey.*

*Var.* 2. with the vertebral dorsal streak very obscure or entirely wanting. Thibet. *Capt. Strachey.*

#### OSTEOLOGY, t. 37. f. 2.

Skull. Thibet. Presented by B. H. Hodgson, Esq.

Two skulls, lower jaw wanting. Presented by B. H. Hodgson, Esq. The specimens referred to by Mr. Gray in the *P. Z. S.* 1839.

\*Skull. Thibet, N. of Ladack. Presented by the Earl of Gifford.

The forehead of all the three specimens of the skull of *E. Hemionus* from Thibet is rather convex between the eyes, and the centre of the face is narrow and keeled on the sides; while in the skull of *E. Onager* from Kutch the forehead is flat between the eyes, and the centre line of the face is rather broader and rounded gradually off on the sides, and the incisive bone is longer and more gradually arched, making the incisor more perpendicular in the latter than in any of the former.

But the most distinctive character between the four skulls is in the position of the infraorbital foramen. In *E. Onager* it is high up, about one-third the space between the face-line and the back edge of the teeth; it is far back, being directly over the front edge of the cheek-ridge and the back end of the third grinder; while in all the three specimens of the skulls of *E. Kiang* this foramen is lower down, being nearly in the centre of the space between the face-line and the base of the teeth, and it

is placed in a line over the back edge of the second grinder, some distance in front of the end of the cheek-ridge. The under surface of the body of the posterior sphenoid is narrow and convex in *E. Hemionus* and broad and flat in *E. Kiang*. The vomer is much more compressed in the latter than in *E. Hemionus*. I am not certain that the distinctions here described may be sufficient to show that these two animals are separate species, but they indicate the necessity of the subject being more fully examined.

In the position of the suborbital foramen the *E. Hemionus* more nearly resembles the *E. Asinus*, and the *E. Onager* than of *E. Zebra* and *E. Burchellii*.—Gray, *Proc. Zool. Soc.* 1849, 29.

Two of the skulls of the *Equus Kiang* show the small rudimentary grinder in front of the other, but this tooth is to be more or less distinctly observed in the skulls of the other *Equide* in the Museum Collection. I may observe, that in the skull of *Equus Burchellii* in the British Museum Collection, this tooth is placed on the inner side of the first true grinder.

The suborbital foramen in the skulls in the India House from Thibet rather varies in position, but in all it is placed over the middle or third tooth. In the old male it appears to be rather higher than in the nearly adult female and in the young skull, where the hinder grinder is just springing out.

This animal must not be confounded with the domestic asses which are used for burden in Thibet.—Capt. Strachey.

The male Kiangs are larger and deeper coloured. They live in troops of from eight to ten under the care of a solitary male, where the thermometer is below zero. They live partly on the plains and partly on the mountains, and the lower surface of the hoof varies considerably in form and concavity, perhaps from that circumstance.

The *Ghoor Khur* of Ludakh, according to Moorcroft, is white about the nose and under the neck, the belly and legs; the back is light bay and the mane dun. They herd in droves, fly at a trot, stop, and look back.—H. Smith, *Equide*, 310.

Moorcroft saw the Kiangs on the highest summits of Thibet, in their *shining summer coats* and with their antelope form, scouring along in numbers.—H. Smith, *Equide*, 286.

Dr. Walker observes—The *Kiang* neighs like a horse. The *Wild Ass of Cutch* brays like an ass. The *Kiang* has no zebra stripes, neither in the adult nor in the foal. The *Wild Ass of Cutch*: transverse zebra stripes are seen on the shoulder in the adult, and still more in the foal. Sometimes also the shoulder cross has been seen. The habitat of the *Kiang* is on the high table-land of Thibet; of the *Wild Ass of Cutch* in the sultry plains near the mouth of the Indus.

The *Kiang* of Chinese Tartary greatly exceeds that of the



Donkey of Cutch in size ; the stallions often stand 14 hands high. Major Charlton and Major Biddulph state that they neigh like a horse. When taken young they will become so tame as to be led about like a horse, and will follow horses almost anywhere. They live in a climate where the temperature is below the freezing point in the middle of the summer ; yet they throw off their pale woolly coat during that season and become bright bay.—*Major Charlton*.

The Donkey of Cutch is often domesticated in India.—*Ibid*.

?? 4. *ASINUS EQUULEUS*. The YO-TO-TZE.

Yellowish red clay colour. Tip of ears, mane, long hairs of tail, well-defined line down the back to middle of tail, and cross band on shoulder, three or four cross streaks on knees and hocks, black.

*Asinus Equuleus* (the Yo-to-tze), *H. Smith, Equidæ*, 304.

*Asinus Hippargus* (the Yo-to-tze), *H. Smith, Equidæ*, t. 17.

The specimen described by Col. H. Smith was alive in a livery stable near Park Lane, London ; it was said to have been brought from the Chinese frontier N.E. of Calcutta. It was most probably a *Kiang*, or perhaps a mule between it and the Domestic Ass.

**\*\* Body with a black dorsal streak and many more or less distinct transverse or curved streaks. Ears rather short and broad-tipped. The Zebras of South Africa.**

*Hippotigris*, *H. Smith*.

Hippotigrine group or Zebras, *H. Smith, Equidæ*, 320.

† Hoofs slightly concave beneath ; legs white, not or only slightly cross streaked.

Living on the open plains.

5. *ASINUS QUAGGA*. The QUAGGA.

Brown. Head, neck and withers or front of body blackish streaked ; lower part of body, legs and tail white. Hoofs flattish beneath.

*Asinus Quagga*, *Gray, Zool. Journ.* i. 246 ; *List Mam. B. M.* 183 ; *J. Brookes, Mus. Cat.* 20, 1828.

*Equus Quoagga*, *Lesson, Man. Mamm.* 347.

*Equus Quagga*, *Gmelin, S. N.* i. 213 ; *Schreb. Saugth.* t. 317 ; *F. Cuv. Dict. Sc. Nat.* vii. 473. t. ; *Harris, W. An. Afr.* t. 2.

Female Zebra, *Edw. Glean.* i. t. 223.

Le Couagga, *Buffon, H. N. Supp.* iii. t. 4 ; *Cuvier, Menag. Mus.* t. ; *F. Cuvier, Man. Lithog.* t.

Kwagga or Couagga, *Buff. Supp.* vi. 85 ; *Knight, Mus. Anim. Nat.* f. 480.

Opeagha or Quagga, *Masson, Phil. Trans.* lxi. 297.

Hippotigris quacha (the Quagga of the Cape Colonists), *H. Smith, Equidæ*, 330. t. 24.

Quagga, *Shaw, Zool.* ii. 240.

Quacha, *Penn. Quad.* i. 14.

*Hab.* Cape of Good Hope, on open plains.

? Young, stripes very indistinct. South Africa. Presented by W. Burchell, Esq., LL.D.

*E. Isabellinus*, *Temm. MSS.*; *H. Smith, Equidæ*.

Hippotigris isabellinus (the Isabella Quagga), *H. Smith, Equidæ*, 332. t. 25.

*Ane isabelle*, *LeVaillant*.

Lesson places the *Quagga* with the true Horses, because the hair extends nearer to the base of the tail, overlooking the warts and other natural characters.—*Nov. Tab. R. A.* 166, 1842.

The *Quagga* is found in herds near the Cape Colony.

LeVaillant, as Col. Smith observes, only saw, and did not possess, the *Ane Isabelle*. The specimen in the British Museum described and figured by Col. H. Smith was certainly only a young *Quagga* in a very imperfect condition, having lost nearly the whole of its fur before it was stuffed. It was presented by Dr. Burchell as the skin of a *Quagga*.

#### 6. ASINUS BURCHELLII. The PEETSI or PEECHI.

Pale brown, under side of body whitish; head, body and upper part of leg black streaked; tail, inside and lower part of leg white. Hoof rather broad, only slightly concave beneath. Skull: suborbital foramen as in *E. Hemionus*.

*Equus Zebra*, *Burchell, Travels*, i. 139, vig. at p. 252.

*Asinus Burchellii*, *Gray, Zool. Journ.* ii. 247. t. 9. f. 1. animal, f. 2. hoof, 1824; *List Mam. B. M.* 183.

*Equus Zebroides*, *Lesson, Man. Mamm.* 346; *Nov. Tab. R. A.* 166, 1842.

*Equus Burchellii*, *Bennett, List Animals Zool. Gard.* 1830, 40. n. 62; *Fischer, Syn. Mam.* 432.

*Equus Zebra*, male, *F. Cuvier, Menag. Mus.* t.

*Equus montanus* (the Dauw), *F. Cuvier, Mam. Lithog.* t.

female and foal (not *Burchell*); *Lesson, Mammifères*, i. 248.

Hippotigris Burchellii (the Dauw), *H. Smith, Equidæ*, 329. t. 23. ♀ & jun.

*Burchell's Zebra*, *Harris, W. A. Africa*, t. 5; *Knight, Mus. Anim. Nat.* f. 481.

Striped or Bonte Quagga of the Cape Colonists, *Harris, l. c.* 7. Peet-sey of the Matabuli and Bechianas.

Dauw, *F. Cuvier, Mam. Lithog.* t.

*Hab.* South Africa, plains.

a. South Africa. Presented by W. Burchell, Esq., LL.D.

b. Young. South Africa. From the South African Museum.

# OSTEOLOGY.

\*Skull, female. South Africa.

Found in herds in every district north of the Orange river. It admits of being tamed to a certain extent with considerable facility, and occasionally a half-domesticated specimen is exposed for sale in Cape Town with a rider on its back: even in the most tractable state to which it has yet been reduced, it is regarded as wicked, treacherous, obstinate, and fickle.—*H. Smith*.

M. F. Cuvier has applied the Hottentot name for the true Zebra to this species, and used for it the name *E. montanus*, that Burchell gave to that animal, though it only inhabits the plains.

†† Hoofs narrow, deeply concave beneath; legs cross-banded. Living on the mountains.

## 7. ASINUS ZEBRA. The ZEBRA.

White; head, body and legs to the hoofs black-banded; nose reddish; belly and inside of thighs not banded; tail end blackish. Hoofs narrow, deeply concave beneath. Skull: suborbital foramen as in *E. Hemionus*.

Zebra Indica, *Aldrov. Solid.* 416. fig.; *Raii Syn.* 64.

Equus Indicus, *Jonston, Quad.* t. 5.

Equus Brasiliensis, *Jacob. Mus. Reg.* 3. t. 2. f. 1.

Hippotigris, *Dio Cass. Hist.* l. 77.

Equus Zebra, *Linn. S. N.* i. 101; *Schreb. Saugth.* t. 316.

Asinus Zebra, *Gray, Zool. Journ.* ii. 248. t. 9. f. 3, hoofs; *Cat. Mamm. B. M.* 183; *Osteol. Spec. B. M.* 70; *J. Brookes, Mus. Cat.* 20, 1828.

Zèbre, *Buffon, H. N.* xii. t. 12.

Zebra, *Ray, Quad.* 69; *Penn. Quad.*; *Knight, Mus. Anim. Nat.* f. 479, 508.

Sebra, *Stubb.*

Hippotigris campestris, *H. Smith, MSS.* l. c. 329.

Equus montanus, *Burchell, Travels*, i. 139. 265, ii. 270; *Harris, W. A. Africa*, t. 24. f. 1.

Male Zebra, *Edwards, Glean.* i. t. 222.

Wild Paard or Wild Horse of the Dutch Colonists, *Burchell, Trav.*; *Harris, l. c.* 7.

Wilder Esel, *Kolbe.*

Daow (or True Zebra) of the Cape Colonists, *Harris, l. c.* 7.

Zeura or Zuora, *Lobo, Abyss.* i. 291?

Wild Ass, *Kolbe, Cape*, ii. 112.

Var.? Hippotigris zebra (the Zebra), *H. Smith, Equidæ*, 324. t. 21.

*Hippotigris antiquorum* (the Congo Dauw or Zebra of Pigafetta),  
*H. Smith, Equidæ*, 327.

*Hippotigris antiquorum* (Angola Dauw), *H. Smith, Equidæ*,  
t. 21.

*Hab.* South Africa, mountains.

a. Adult. South Africa. Presented by W. Burchell, Esq.,  
LL.D.

b. Young. South Africa. Presented by G. B. Sowerby, Esq.

#### OSTEOLOGY.

\*Skeleton. South Africa.

Skull. South Africa.

Skull of male. Mule between Zebra and Ass.

\*Skull. Presented by the Earl of Derby.

Skull. Hybrid between *Asinus Zebra* and *Asinus vulgaris*.  
Presented by the Zoological Society of London.

#### *Mules or Hybrids of the different species of Horses.*

1. The Common Mule,—the hybrid between the *Ass* and the  
*Mare*.

Mules, *Raii Quad.* 64.

*Equus Asinus Mulus*, *Gmelin*.

*Equus Mulus*, *Schreb.* t. 214.

Mule, *Pennant*.

Grand Mulet, *Buffon*, *H. N.* iv. t. 12.

Maulthier, *Bechstein*.

Mule, *Bewick, Hist. Quad.* 16. fig.; *H. Smith, Equidæ*, 334.

Common Mule, *H. Smith, Equidæ*, 344.

Grey Mule of Egypt and Barbary, *H. Smith, Equidæ*, 345.

Black Mule of South of France and Spain, *H. Smith, Equidæ*,  
345.

The Dun-coloured Mules of Volterra (Italy), *H. Smith, Equidæ*,  
346.

2. The Hinny,—the hybrid between the *Horse* and the she-*Ass*.

Hinnus, *Arist. H. A.* i. c. 7.

*Equus Asinus hinnus*, *Gmelin*.

*Equus hinnus*, *Schreb.* t. 215.

Petit Mulet, *Buffon*, *H. N.* iv. t. 13.

Maulesel, *Bechstein*.

The Hinny, *H. Smith, Equidæ*, 346. t. 30.

3. Mule of a male *Hemione* and a female *Zebra*, *Knowsley Menag.*  
t. 57. f. 1. The shoulders and legs are banded.

a. Adult. Bred at Knowsley. Presented by the Earl of Derby.

Mule of a male *Maltese Ass* and a *Zebra*, *Knowsley Menag.* t. 57. f. 2.

The body and legs are striped; the stripes on the head and body are narrow, except the shoulder-cross, which is very distinct and forked; the rump is covered with small spots.

Ribbon-legged Ass (*Asinus vulgaris*, var. *fasciata*), *Gray, Zool. Journ.* i. 245.

a. Adult. Bred at Windsor Park.

4. Mule between a male *Ass* and *Zebra*.

Grey indistinct cross, and a few narrow dark stripes on the shoulders and fore legs; tail elongate, end tufted, upper part slightly banded; ears moderate.

Métis femelle d'Ane et de Zebra, *F. Cuvier, Mamm. Lith.* t. ♀.

This is very different from the Mule with the Maltese Ass. It has scarcely any stripes.

5. Mule between a male ? *Burchell's Zebra* and a common *Ass*, *Knowsley Menag.* t. 58. f. 1.

Grey, with very indistinct bands on the front of the back; a more distinct, short, narrow cross-band, divided into three below, and with some black cross-bands on the outside of the legs.

a. Adult. Used to draw in a tandem. Bred in the Zoological Gardens.

6. Mule between a male domestic *Ass* and an *Hemione*, *Knowsley Menag.* t. 58. f. 2.

It is very like the mother, but has a distinct black cross-band and some indistinct cross-bands on the outside of the hocks and knees.

This animal is now living in the Gardens of the Zoological Society. It changes its colour and becomes greyer in winter, like its female parent. I have seen another example of this Mule, exactly like the one here described.

7. Mule between an *Hemione* and a *Burchell's Zebra*, *Knowsley Menag.* t. 59. f. 1.

Reddish grey; head, neck and front part of the body with very narrow, rather darker streaks.

8. The Hybrid Ass and Zebra, *H. Smith, Equidæ*, 343. t. 28; *Mus. Paris*, from *F. Cuvier*.

Quagga Mule, *H. Smith, Equidæ*, 343. t. 29.

**Zebra Donkey or Mule Zebras**, bred between the two species of *Zebra* and the *Donkey*, *Bennett, List Anim. Zool. Gard.* 1830, 13. n. 63 & 43.

9. **Mules between Male Quagga and Mare**, *Morton, Phil. Trans.* 1821.

**The Hybrid first foal of Brood Mare and Quagga**, *H. Smith, Equidæ*, 342. t. 26.

**The Filly bearing marks of the Quagga**, *H. Smith, Equidæ*, 342. t. 25.

**The Colt, the third issue of Brood Mare and the second by the Black Arab**, *H. Smith, Equidæ*, 324. t. 27.

**The Brood Mare and the third foal with marks of the Quagga**, *H. Smith, Equidæ*, 324. t. 14.

10. **The offspring of a Mule (the produce of a male *Ass* and a *Zebra*) with a bay mare Pony**, *Knowsley Menag.* t. 59. f. 2.

Iron-grey; with a short narrow cross-band on withers, very faint indications of stripes on the sides, and more distinct dark stripes on outsides of the hocks and knees; tail bushy from the base, like a horse; head heavy; mane brown and grey.

This animal is used to draw a small cart. It stands 8 hands high.

## ADDENDA ET CORRIGENDA.

*Page 26, line 34, after DRAWINGS, add—*Drawing of large horned Buffalo by Daniel at Luckow, *Banks, Icon. ined. B.M. Mam. t.* .

*Page 40, after line 4, add—*The living YAK, POËPHAGUS, shows a much larger muffle than the dry skin leads one to expect; it is square, and occupies the space between the nostrils, but is smaller than that of the *Bisons*.

*Page 43, line 16, after OVIBOS MOSCHATUS, add—*  
a. Skeleton. N. America. Presented by John Rae, Esq.

*Page 49, line 14, for AIGOCERUS read HIPPOTRAGUS.*

*Page 50, line 12, for BOSELAPHUS read ALCELAPHUS.*

*Page 85, line 2, after CEPHALOPHUS NIGER, add as Syn.* Antelope Pluto, *Temm. MSS. Mus. Leyd. 1852.*

*Page 102, line 2, for ÆGOCERUS read HIPPOTRAGUS, as the former name is applied to the wild goats; and change generic name of the two species to Hippotragus leucophæus, Hippotragus niger.*

*Page 114, line 29, after MAZAMA AMERICANA, add—*

a. Skin without horns. N. America. Presented by John Rae, Esq.

a. Stuffed, imperfect. N. America. From the Zoological Society Museum.

*Page 192, line 17, for N.W. coast of America read Siberia, as Sir John Richardson states they were tame deer, and they are not domesticated in America.*





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- ~~~~~
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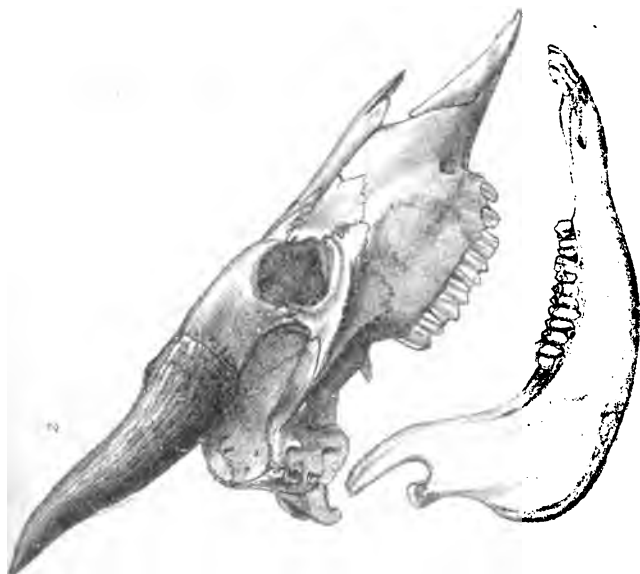
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BUBALUS BRACHYCEPHUS

Red & Co's Litho. of the 54 Mar. 1871

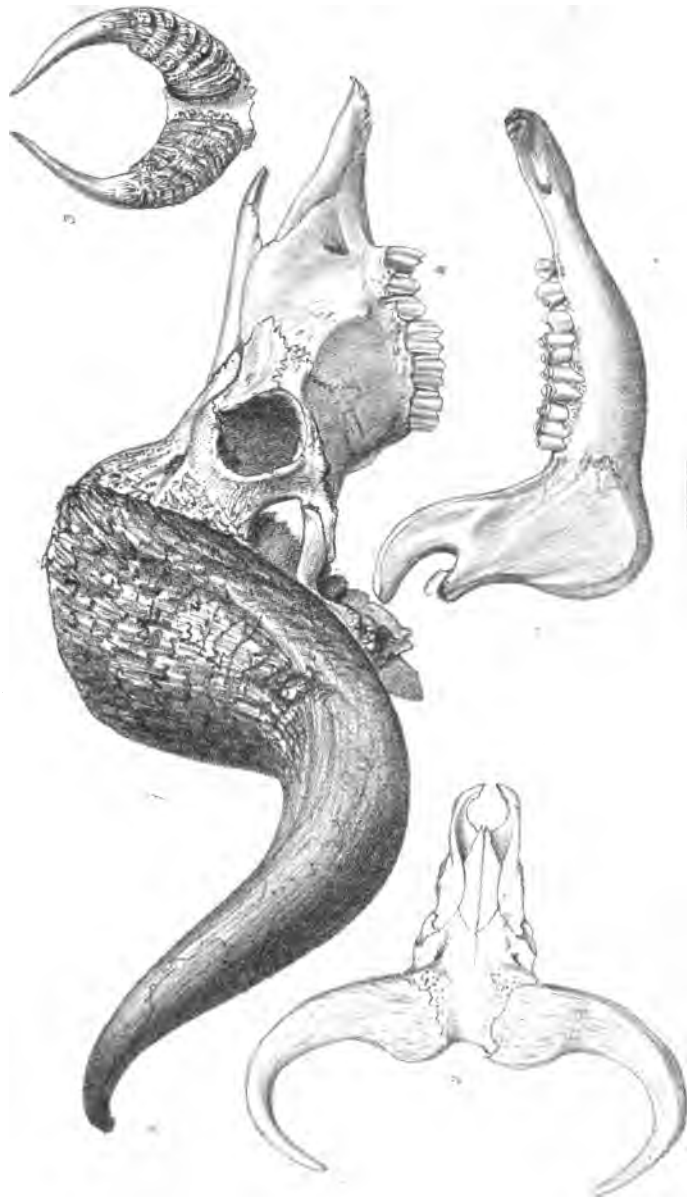


BOS TAURUS.

1 nat. size







BUBALUS CAFFER.

Emd. & George. Lithographers, 54, Mark Lane, London.

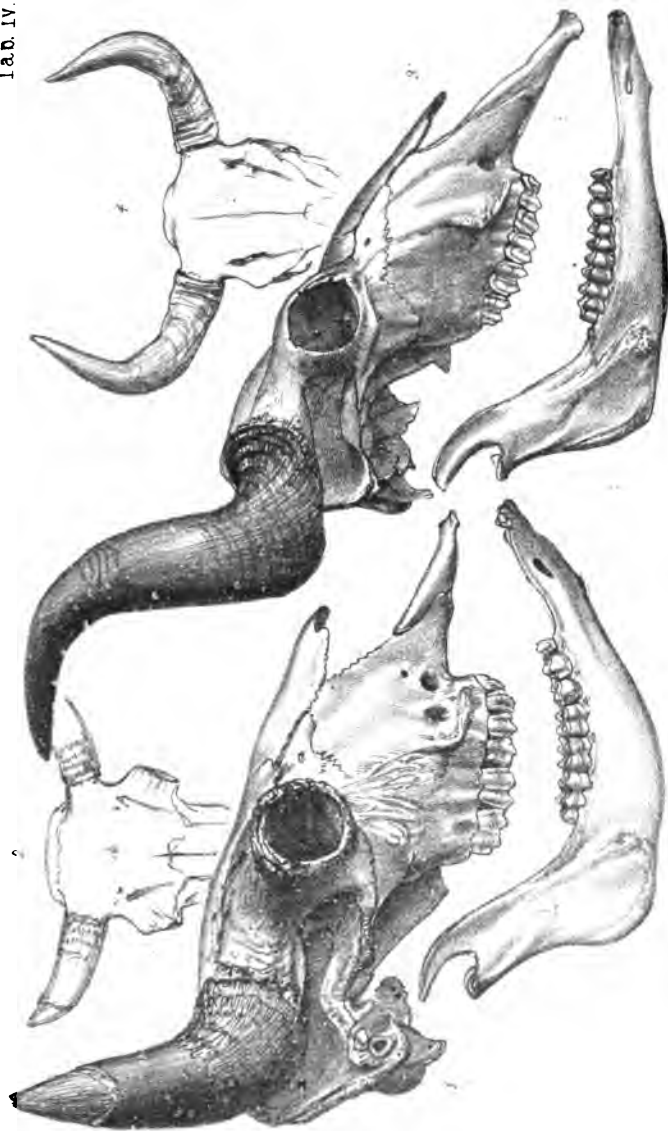
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1 2. ANOA DEPRESSICORNIS. 3 BIBOS FRONTALIS.





BISON AMERICANUS.

POEPHAGUS GRUNIENS.





BUDORCAS TAXICOLOR



OVIENS MOSCHATUS









♀

3 4

1.2. OVIBOS MOSCHATUS. ♂. JUN<sup>R</sup>

Ford & George Lithographers, 54, Hutton Garden

Wing, a.d. and. lith.





12. SIAGA PARTARICA. 34. PANTHIATOPS HODGSONI. 5. GAZELLA DORCAS.

Howe & Co. Lith. New York.

W. H. and Nat. 1874





AGOPS BENNETTI

241 nat. lat.

2. PROCAPRA PICTICAUDA

3. EPICEROS VULCANI

Ford & George Ichthyologists 14 Boston Garden





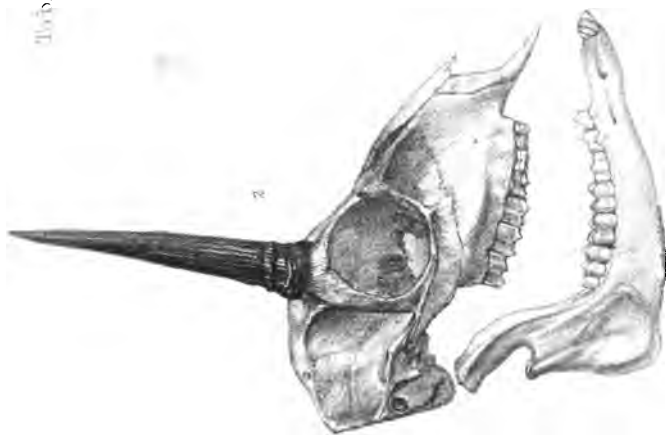
4. 5. CALOTRAGUS TRAGULUS.  
Ford & George, Lithographers, 141 Nassau Gar.



1. 3. ANTILOPE CERVICAPRA.







CRACEROS CUADRICORNIS 2. OREOTRAGUS SALTATRIX 3. NEOCRATUS SALTATRIX

Ped &amp; Jesse Longfellow, Jr. &amp; Co. 1877.

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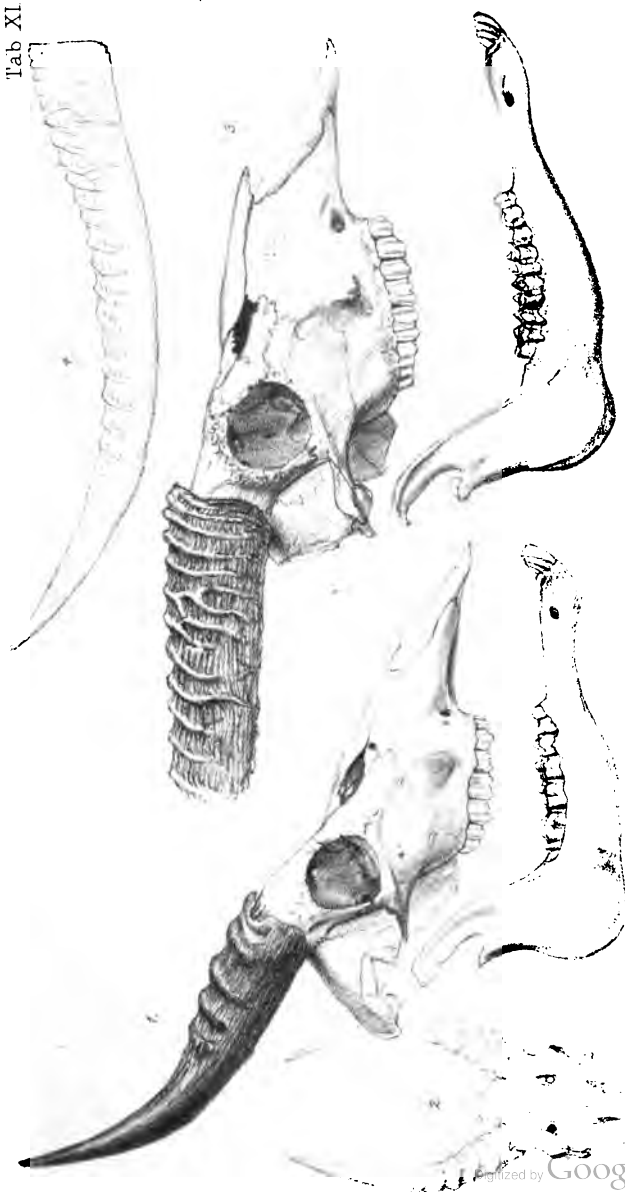


1. *PHIATOPHUS NATALENSIS*. 2. *NANOTRACTUS PERPALLIDUS*. 3. *ELAPHOTRACTUS ARUNDINACEUS*.

From the *Journal of the Geological Society of South Africa*, vol. 1, p. 100, 1904.

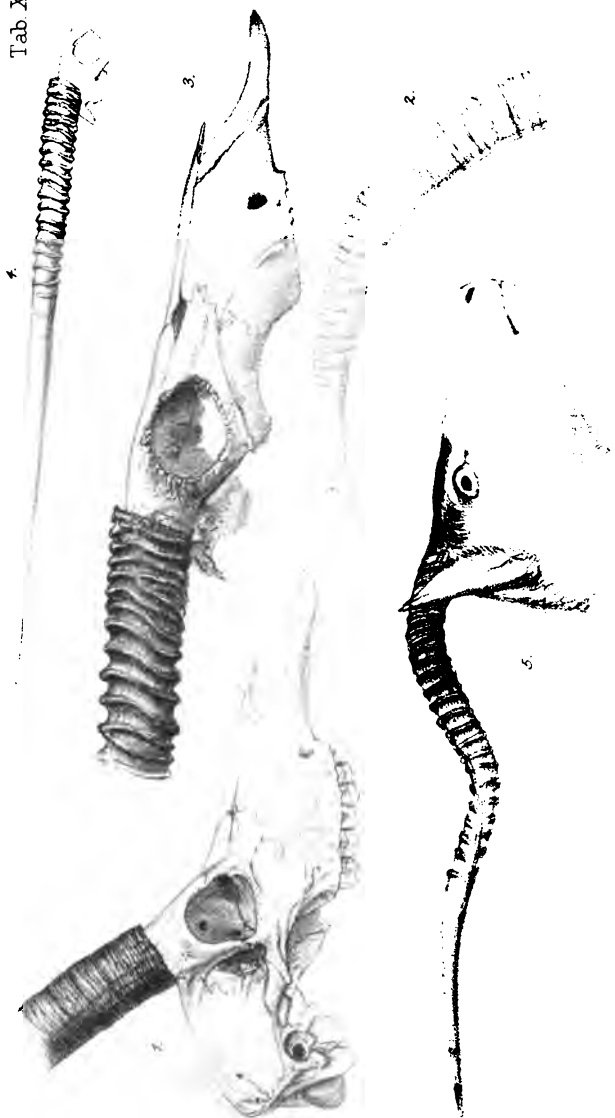
Pl. 101, fig. 101, et 102.





1 2. ADENOTA KOB. 3 4 KOLUS ELLIPSIPRYMNUS.





1. 2. HIPPOCRAGUS LEUCOPHAUS. 3. 4. ORYX LEUCORYX. 5. ADDAX NASOMACULATUS.

W. Wing, ad nat. lib.

Ford & George, Lithographers, 54, Euston Road.







LAPPOORNIS RUBICINCTA. 3. NERVENPHEDIS GORAL.





1. MAZAMA AMERICANA 2. 4 RUFICAPPA TRAGUS





1.3 DICRANOCEROS FURCIFER 4.5. CONNOCHETTES GNU.





1 3 ALCEPHUS CAAMA. 4 5 LAMALIS SENEGALENSIS







1.2. STREPSICEROS KUDU

3.4. OREAS CANNA

Ford & George Lithographers 54, Eaton Garden

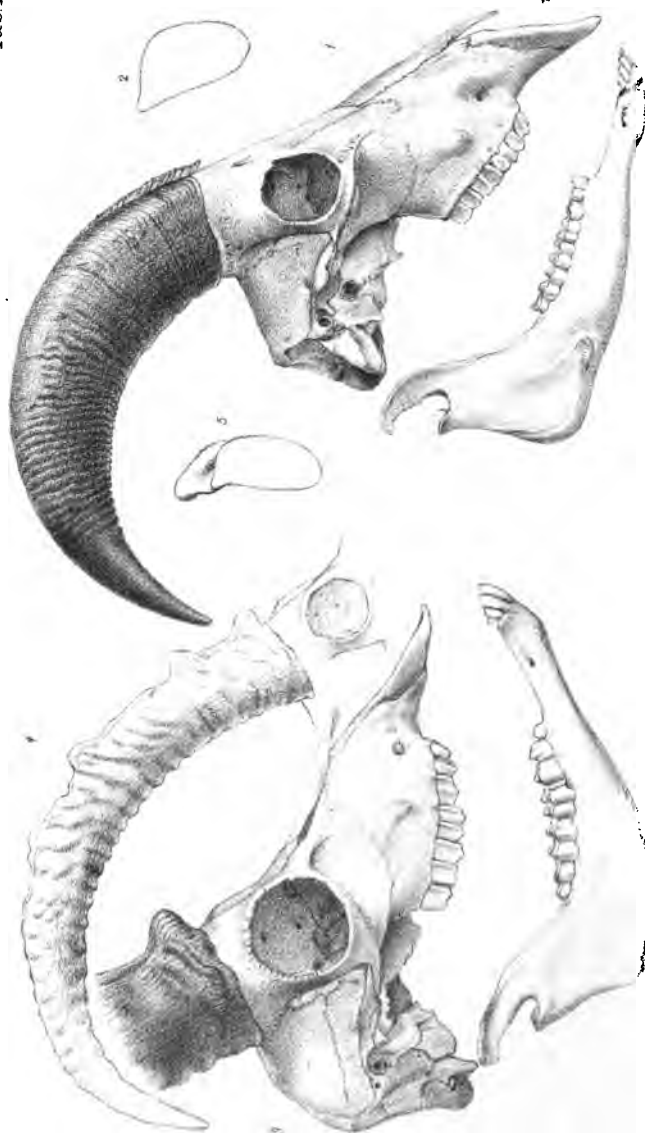




1. 2. TRAGELAPHUS SCRIPTA.

3. 4. HEMITRAGUS JEMLAICA.





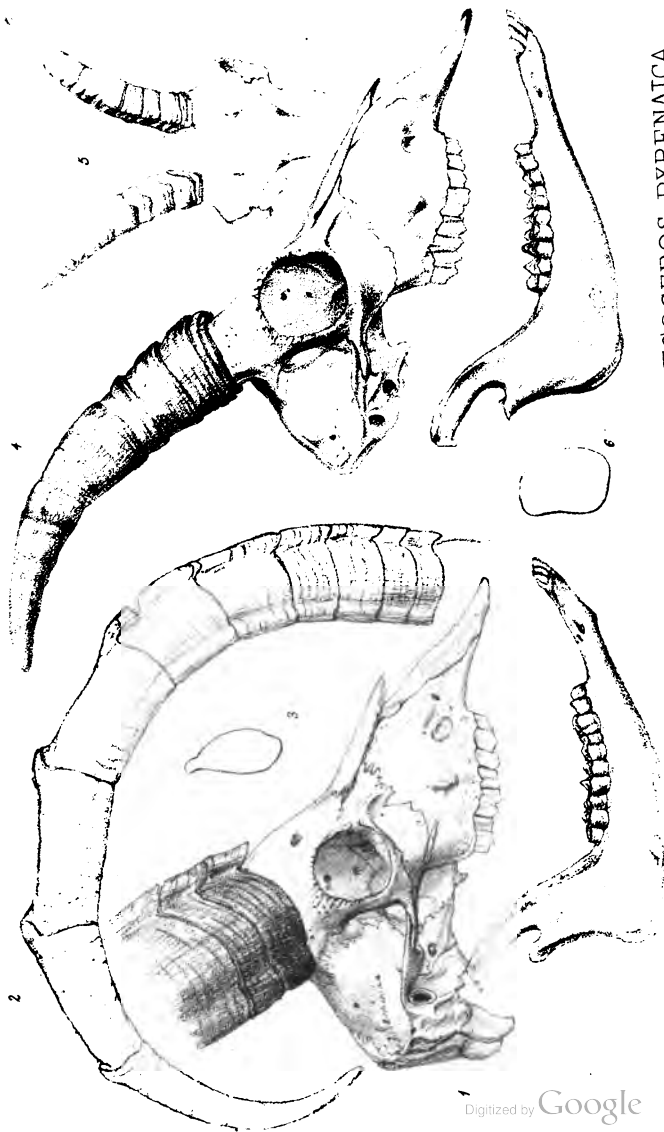
1.2. KEMAS WARRYATO.

Ford & George. Lithogr. v. 54. Hutton. Carden.

3.5. IBEX NUBLIANA.

W. Wing. ad. nat. lith.



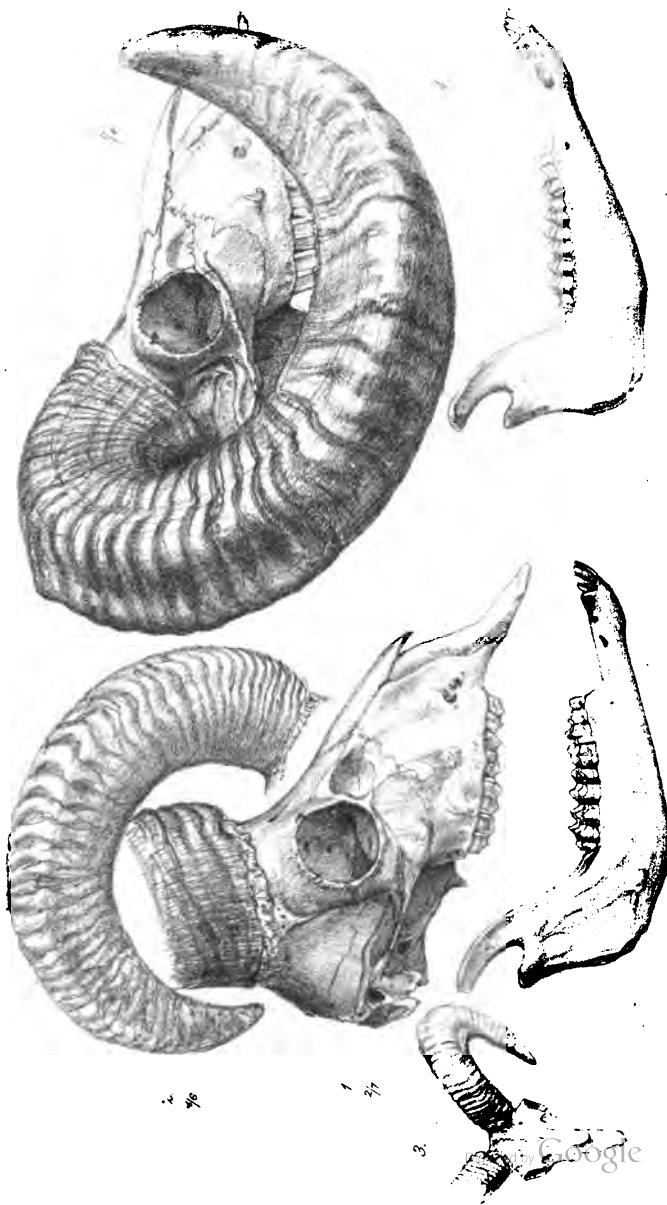


1.3. CAPRA HIRCUS.

4.6. AEGOCEROS PYRENAICA.  
Ford & George. Lithographs 54. Britton Garden.







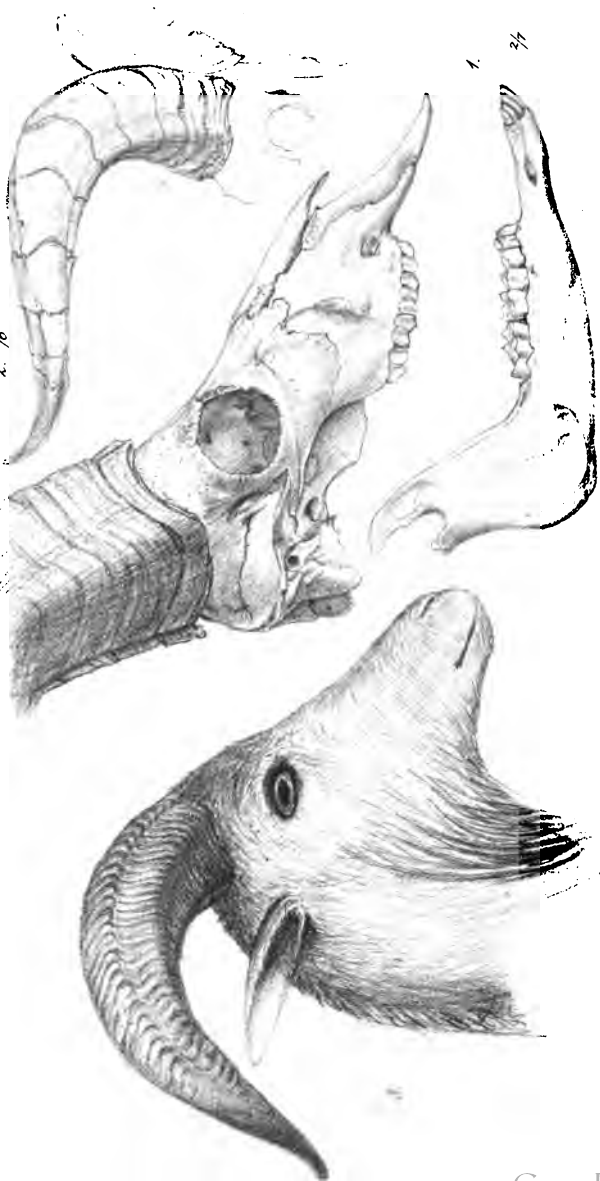
13. MUSIGMON VIGNEI. 4 OVIS



2.  $\frac{1}{6}$

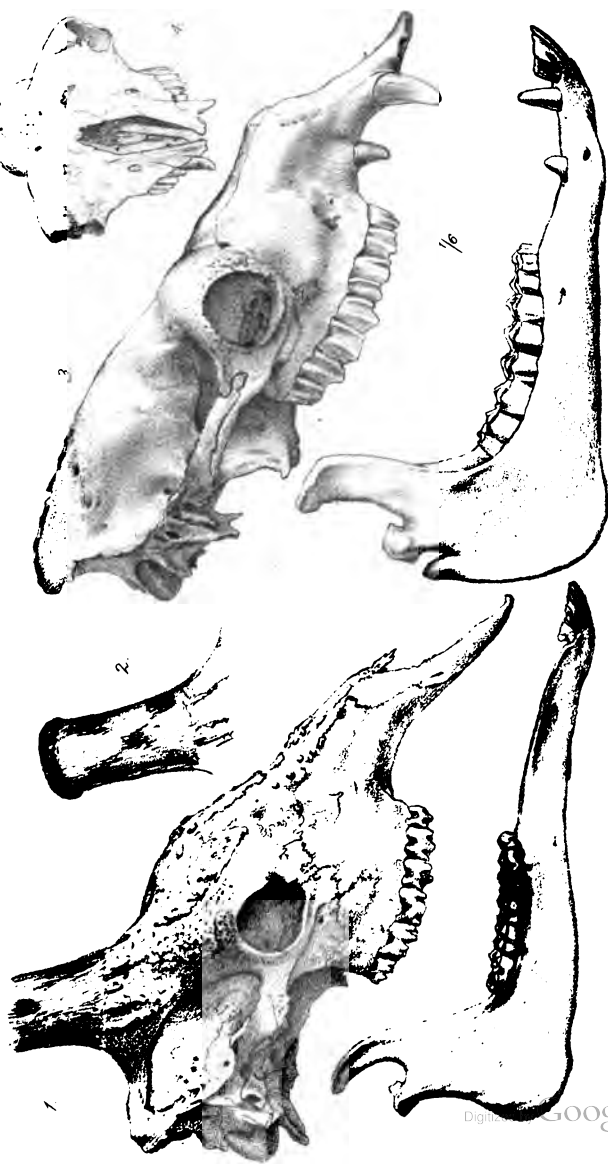
1.

$\frac{3}{4}$



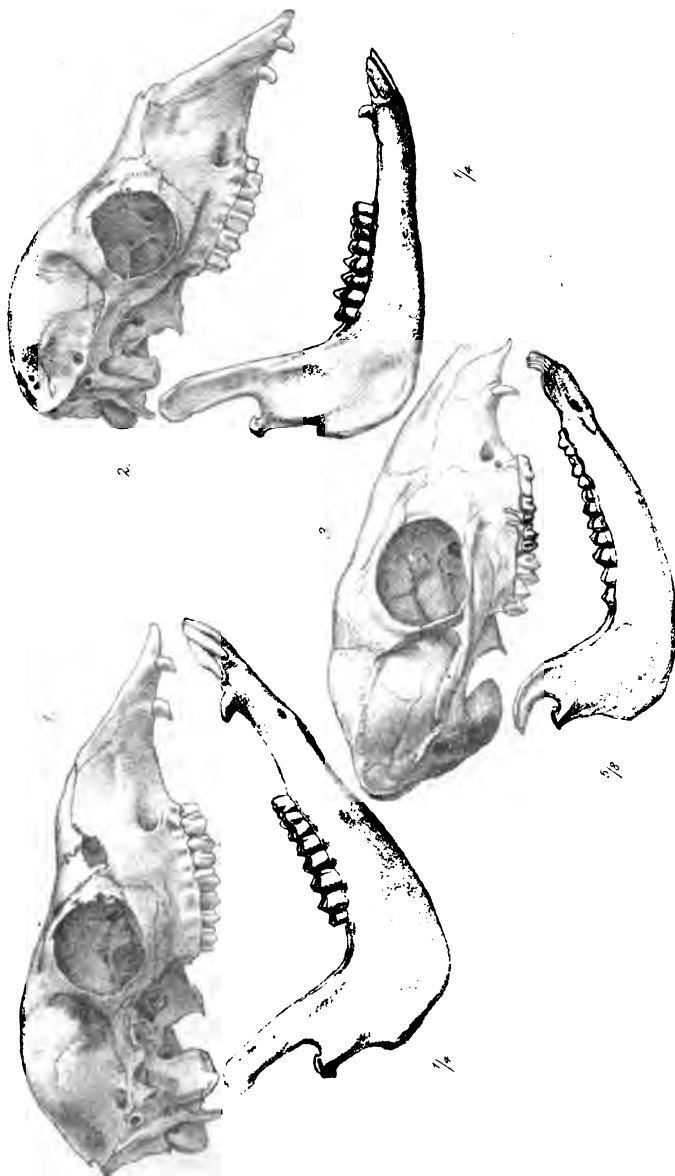
1. 2. PSEUDOCIS NAHOOR 3. ALMOTRACUS TRACHIAPHUS.





1. 2. CAMELOPARDALIS CIRAFFA. 3. 4. CAMELUS BACTRIANUS.



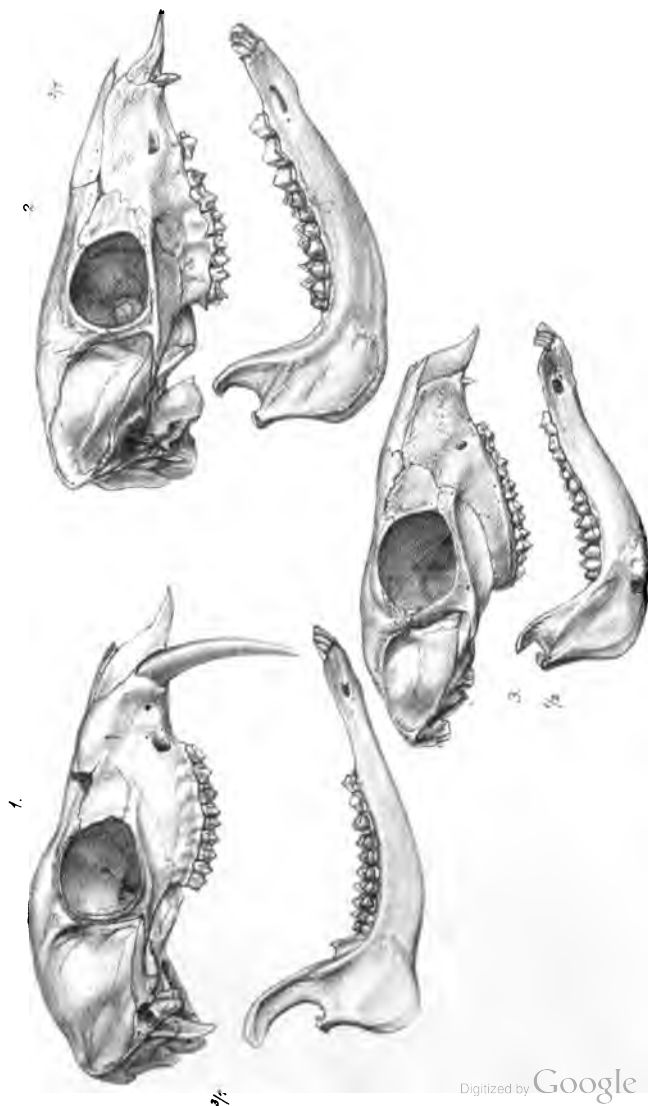


1 LAMA PACOS. 2 LAMA VICUNA. 3 MEMINNA INDICA.

Burd & George, Lithographers, 54, Hutton Arcade.







1. TRAGULUS CHRYSOGASTER. 2. HYEMOSCHUS AQUATICUS. 3. TRAGULUS STANLEYANUS.

Forb. & Co. Lith. New York, N.Y. Hutton, Glasgow.





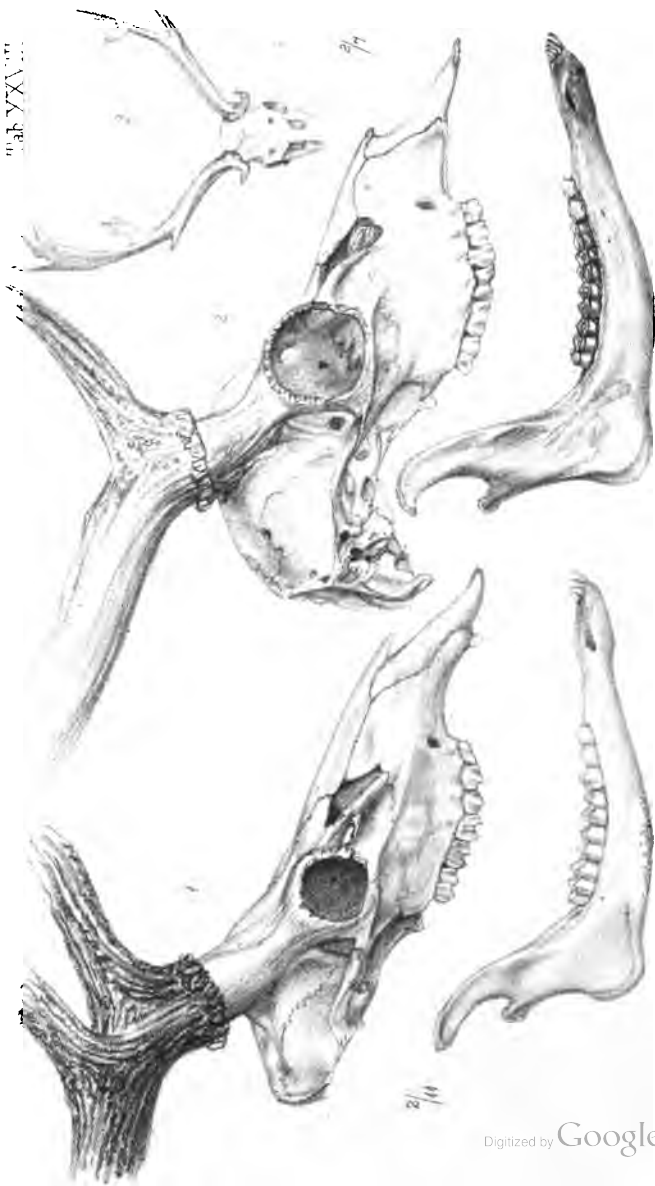
1 ALCE MALCHIS 2.3 TARANDUS RANGIFER.





1. ALCE MALCHIS. 2. TARANDUS RANGIFER. 3. CERVUS CASPERIANUS.





1 CERVUS CASPIANUS 2 3 DAMA VULGARIS



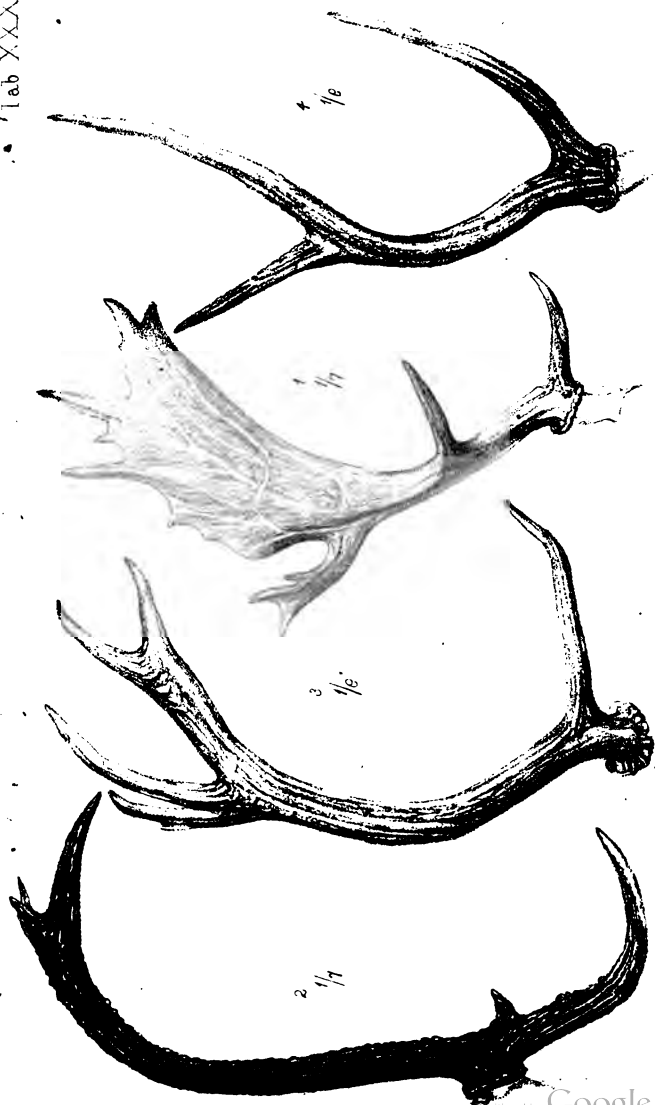




1 2 PANCLIA ELDII 3 4 RUCERVUS DUVAUCILLII



Tab XXX



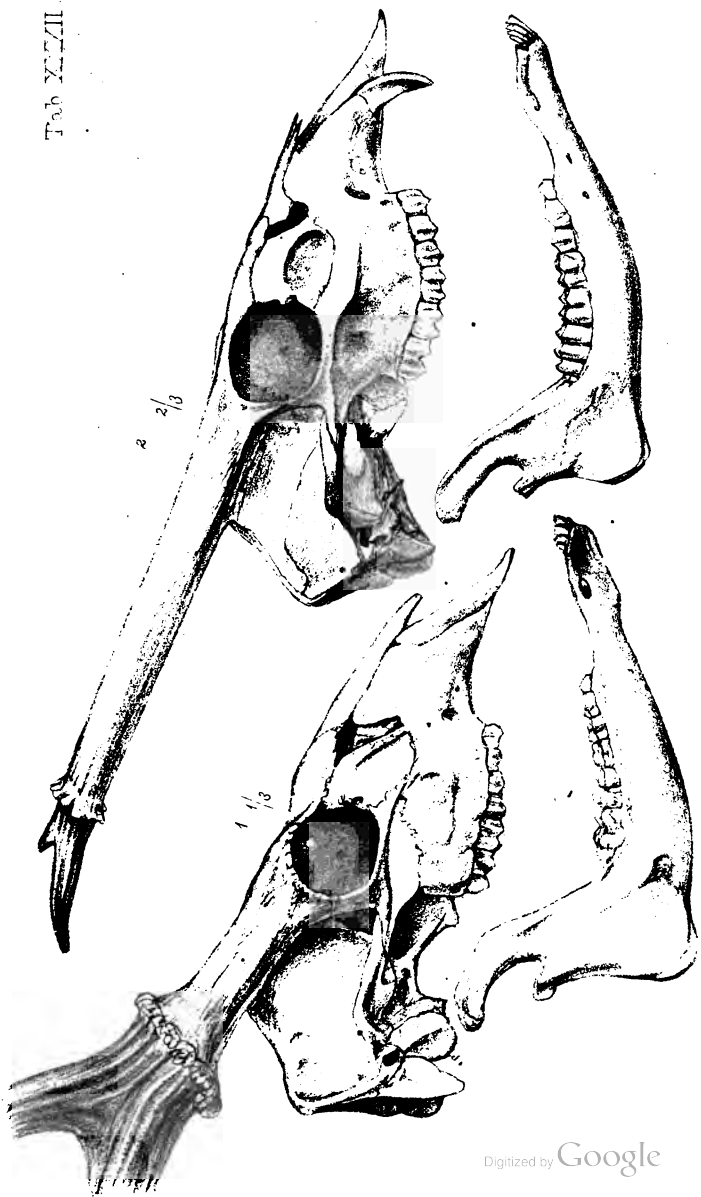
2. PANOLIA 3. RUCERVUS 1. DAMA 4. RUSA





1 2 RUSA EQUINA 3 4 AXIS

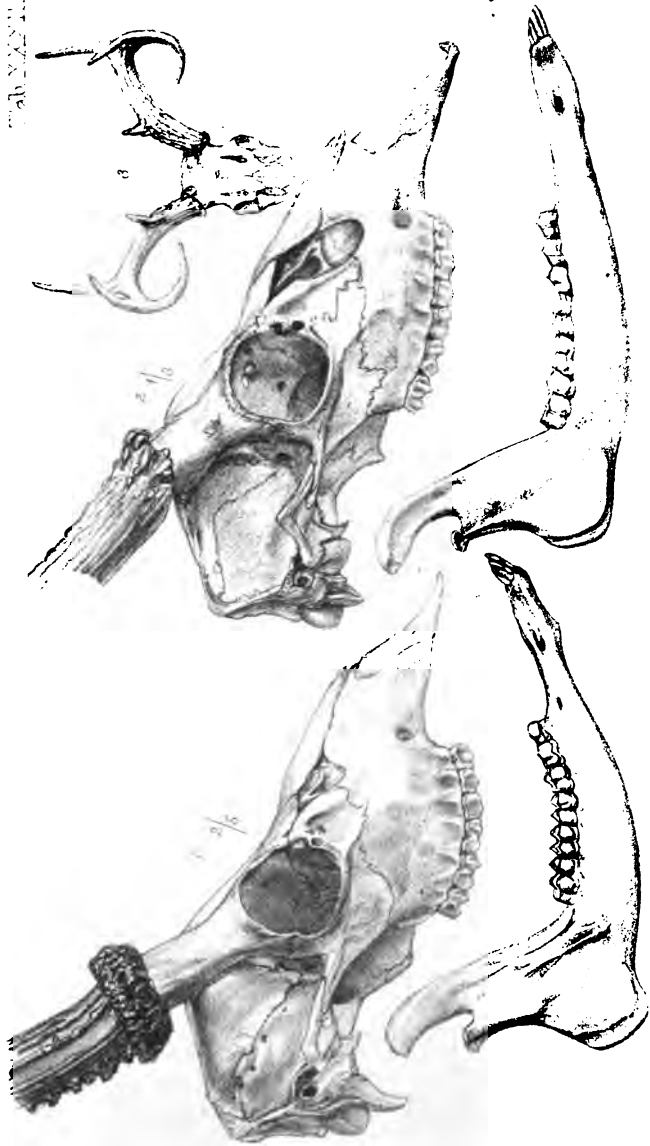




1. HYELAPHUS FORCINUS 2. CERVULUS MOSCHATUS







1 CAPREOLUS CAPRÆA 2 3 CARIACUS VIRGINIANUS

W. Wing del. nat. lib.

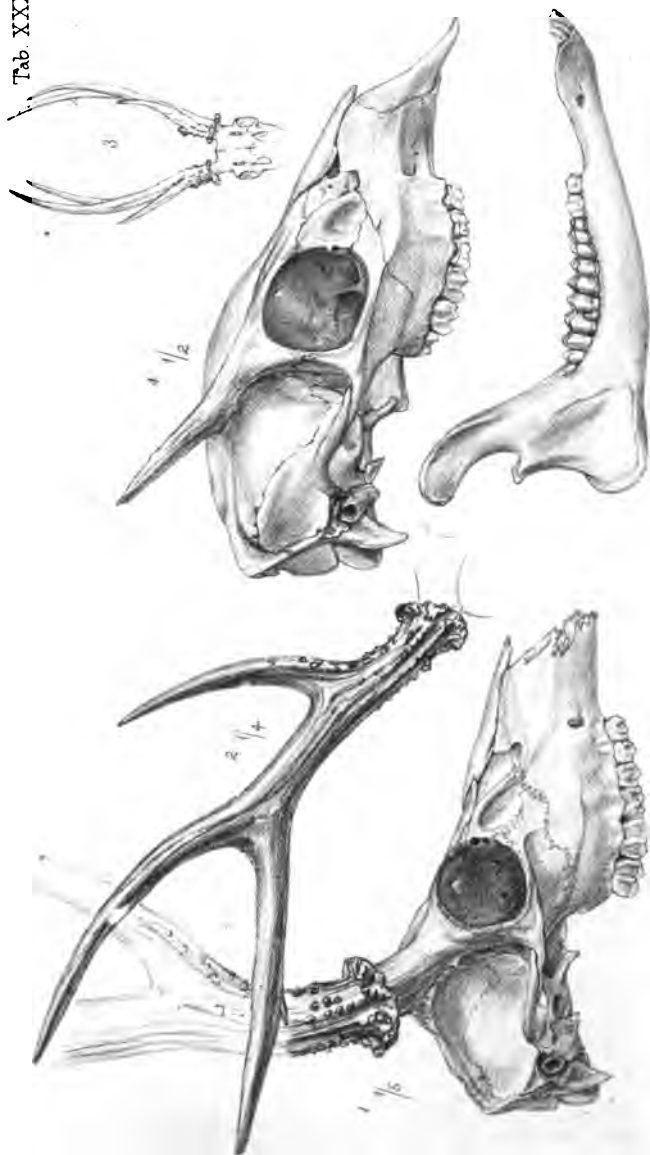




1 AXIS. 2 HYELAPHUS. 3 CARIACUS. 4 CAPREOLUS.

2 ad nat. lib.





1. BLASTOCERUS CAMPESTRIS 4. COASSUS RUFUS.



3 1/3



1. PUDU CHILENSIS. 4 PELEA 2 3 PELEA

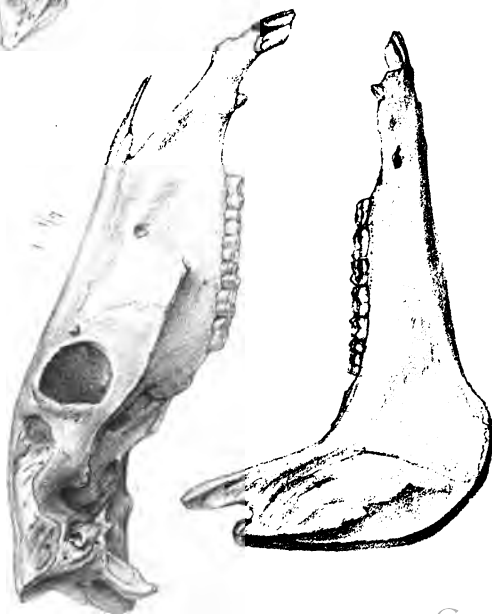
Wing, ad nat 20.







ASINUS KIANG.



EQUUS CABALLUS.

V Wing ad nat lith





